

# *and* **ROADS STREETS**

**HIGHWAYS • BRIDGES • AIR FIELDS • HEAVY CONSTRUCTION**

**A GILLETTE PUBLICATION**

Gillette Publishing Co., 22 West Maple St., Chicago 10, Illinois

• Accepted as Controlled Circulation Publication at Milwaukee, Wis.



Special batch trucks made this job hum . . . page 65

Scrapers Took Out The Rock . . . page 98

New Bituminous Quality Program . . . page 187

New Equipment and Materials . . . page 145

**March, 1959**

UNIVERSITY MICROFILMS  
EUGENE B. PUGH  
313 N. 1ST ST.  
ANN ARBOR, MICH.



**THE MULTIPLE**

**JACKSON**

**UNMATCHED FOR VERSATILITY and RAPID  
ACHIEVEMENT OF SPECIFIED DENSITY!**

**VIBRATORY COMPACTORS • MULTIPLE & TRAILER TYPES**

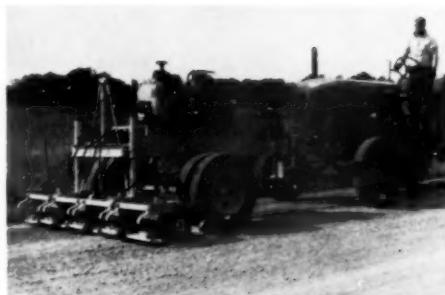
Each of the compactor units employed in the workheads of these machines supplies FORTY-TWO HUNDRED 6,000 lb. VIBRATORY BLOWS PER MINUTE and achieves maximum density of any granular material used in base courses and fills in the fastest possible time.

Each compactor unit may be operated independently and hence units may be detached from the maximum coverage arrangement of 6 units in the workhead (13', 3") to ideally fit each job; or they may be regrouped in a wide variety of tandem arrangements for more rapid densification of narrower areas. And in the case of the TRAILER COMPACTOR as many as eight compactor units may be employed in two workheads of 4 each — one in front and the other following the trailer.

**NEWLY DESIGNED COMPACTOR BASES PERMIT OPERATION OF BOTH THE MULTIPLE AND TRAILER COMPACTORS IN EITHER DIRECTION — NO DEADHEADING OR TURNING REQUIRED.**

Used on nearly all of the nation's major highway projects, including the AASHO Test Road, the JACKSON MULTIPLE COMPACTOR has thoroughly demonstrated the outstanding advantages of this method of compaction. With the advent of the JACKSON TRAILER COMPACTOR it is conveniently adaptable to paving projects of nearly every type and size.

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**JACKSON TRAILER COMPACTOR** — May be pushed or pulled by any prime mover capable of working speeds as low as 50 F.P.M. Towed to location at any road speed . . . operated in either direction . . . controlled by operator of prime mover. Power plant supplies both single and 3-phase 110-150 volt, 60-80 cycle A.C. and has many uses.

**FOR SALE OR RENT FROM YOUR JACKSON DISTRIBUTOR. Name and descriptive literature sent on request.**

**JACKSON VIBRATORS  
INC., LUDINGTON, MICH.**



# THEY'RE HERE!

## all-new BANTAM 350's

**UP go capacity and earnings  
to all-time highs in the 3/8-yd. field!**



These new BANTAMS are the most productive and *most proved* crane-excavators in their size ever offered. So much so, they perform and earn far above their class!

The new 350 series advances the already amazing BANTAM work scope by literally hundreds of additional jobs! You'll handle more jobs, bigger jobs, tougher jobs, trickier jobs — all faster, easier, more profitably. New, increased power (gas or diesel) . . . new, increased line pulls . . . new, speeded work cycle with instant-acting, trouble-free mechanical controls . . . new, longer crane booms (to 70') and deeper digging back hoe (to 18'10") — all these and more assure the greatest operating ease and production ever achieved in a machine anywhere near its popular size.

### 4 BANTAM-built new carriers

No compromise in what you want in carrier capacity or price with a BANTAM! BANTAM builds its own carriers matched to the Model T-350 basic unit for all your work requirements. You have a 4-carrier choice — exactly what you want for more of what you need in performance, stability, and road and field ability.

### Most features and options

It's yours — by far the greatest flexibility ever offered in a crane-excavator. More than 25 different options virtually make you "designer" of your BANTAM strictly to your own work needs. Three types of boom hoists (one standard, two optionals) . . . power load lowering for all models . . . gasoline, diesel, LP-gas or electric drives . . . torque converter . . . 2-speed transmission . . . wide counterweight choice up to 5000 lbs. . . house-type or all-vision cab . . . plus lots more — all in addition to 11 different quick-change attachments, *all BANTAM-built!*

**Put a new BANTAM through its paces  
now at your BANTAM distributor's.  
See him now or write factory.**



**NEW BANTAM CRAWLER** has stronger, more rigid car body with two side frame sizes, standard and long, for extra stability on crane work to eight tons . . . wide base extensions and high-clearance side rails. BANTAM C-350 also features full-reversing, 2-speed travel transmission and new in-cab digging lock. New, long-boom back hoe has deep 18'10" digging depth. 7- and 8-ton capacity.

**NEW BANTAM SELF-PROPELLED** brings new versatility and income potential to this class. Optional 4 x 4 drive . . . new automotive-type power steering . . . independent travel, swing and hoist plus faster travel speeds . . . new bypassing box-beam outriggers for all-around stability. It's the most maneuverable, most capable rig of its kind and it has full 11-ton capacity!



203 PARK ST., WAVERLY, IOWA

World's largest producer of truck crane-excavators

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# ROADS AND STREETS

A GILLETTE PUBLICATION

MARCH, 1959

VOLUME 102

NUMBER 3

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Are Interstate jobs too big, or too little? What is best economic size of job? How should complex

urban projects be broken up? Will there continue to be enough contracts for the little fellows? A staff review soon of this timely subject.

### *Aggregates for the Road Program*

A series of field reports on this major subject—better, faster crushing and screening plant setups, new specifications that affect contractors' work, problems of both engineer and the contractor in adapting to make use of available materials.

Accepted as Controlled Circulation Publication at Milwaukee, Wisconsin. Published monthly. Subscription \$6.00 per year (\$7.00 foreign).

# LANDED A BIG ONE?

**GO WITH GOODYEAR —**  
*for Big-Job profit protection*

## BIG-JOB ANALYSIS

Here's how your job gets a flying start to success. Goodyear Big-Tire Specialists make a detailed check of every phase of the project: terrain, climate, loads, roads, schedules, speeds and any other pertinent factors. Then they recommend from Goodyear's complete line, the exact tire, tread and cord design that your job needs.

## BIG-TIRE EXPERIENCE

Goodyear has built *MORE* pneumatic tires than anyone else. This Goodyear record is your assurance that selection of tires for *your* jobs is based on the broadest practical experience available anywhere and today's top tire-building advancements. For Goodyear paces the industry with the most practical tread and body designs, rubber compounds and Triple-Tough 3-T Nylon Cord — GREATEST TIRE SAVER IN 24 YEARS.

## BIG-TIRE SERVICE

Finally, Goodyear Big-Tire Specialists help you set up, and even operate, a tire-maintenance program to save you **BIG MONEY** in man-hours, machine hours and useful tire life. This includes proper mounting, mating and rotating of tires; correct inflation, cleaning and regular inspection to insure that small injuries are found and repaired before expensive damage can result. In fact, Goodyear can, and will, supply any degree of Big-Tire Service that any contractor can profitably use on any job anywhere.

## And — BIG TIRE PERFORMANCE

### Example: SUPER HARD ROCK LUG

Goodyear has the right tire for every wheel. When the job calls for a wide-base earth-mover tire, for instance, Goodyear's new SUPER HARD ROCK LUG delivers the best all-round performance. This Super Tire, made with the new "square" shoulder design, packs a hefty rubber bonus for stronger bite, longer wear. Yet, it costs no more than conventional wide-base tires. For full details, see your nearby Goodyear dealer, or write: Goodyear, Truck Tire Dept., Akron 16, Ohio.



TRUCK TIRES by

# GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

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ROADS AND STREETS, March, 1959

# OF COURSE IT'S WAUKESHA POWERED

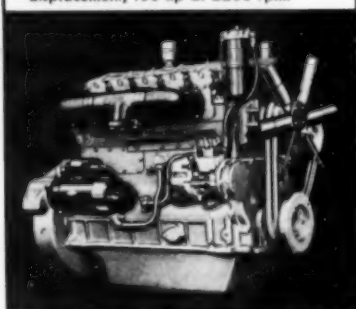


**CLARK  
EQUIPMENT**

## ...this **MICHIGAN** TRACTOR SHOVEL

Triboro Carting Co., New York City, owns this Waukesha powered 175-A Michigan Tractor Shovel. It's tearing up the pavement on Third Avenue in a way that would delight any contractor. Raising time 10.3 seconds, lowering time 7 seconds, dumping time 3 seconds—and this 2¼-yd. Michigan lifts 15,000 lb. at 0 mph; 7500 lb. at 4 mph. Maximum dumping height is 8'6". That's versatility and speed! And power... fast, smooth and flexible—with a Waukesha! You can get a 175-A Michigan with a Waukesha 135-DKB Diesel (shown), or a Waukesha 135-GK gasoline engine. Get Engine Bulletins 1573 and 1545.

Waukesha 135-DKB Diesel—six-cylinder, 4¼-in. bore x 5-in. stroke, 426 cu. in. displacement, 133 hp at 2200 rpm.



413

**WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN**

NEW YORK

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LOS ANGELES

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## ROADS AND STREETS

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**Publication and Editorial Offices:**  
22 West Maple Street, Chicago 10, Ill.  
W. E. GILLETTE,  
*President*  
HALBERT S. GILLETTE  
*Vice President and Assistant Publisher*  
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**Chicago Office:** 22 West Maple St.  
Superior 7-1581

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**ROADS AND STREETS, March, 1959**



## SEAMAN-GUNNISON

*brings to contractors*

- HEAVY IMPACT  
VIBRATORY COMPACTION
- PNEUMATIC COMPACTION
- SMOOTH STEEL ROLLING

ALL in the low-cost, self-propelled Model 7-19 TRV

# TRI-PACTOR

Heavy impact vibratory roll on the TRI-PACTOR, with ballasted weight and impact frequency to compact a wide range of soils and granular materials. Deep vibratory impaction fills voids, produces

uniform densities at production speeds. Hydraulic powered and spring insulated, TRI-PACTOR VIBRATOR is outside steel roll . . . simplifying service and maintenance.

### Now compaction costs can be slashed still further!

New heavy-impact vibratory action has been added to the DUO-PACTOR steel roll in the TRI-PACTOR. Densities of 100% plus at high production rates can be obtained at minimum operating cost . . . savings up to 50% or more in equipment cost and power to operate. A touch on a lever instantly adapts TRI-PACTOR to every change in job conditions:

**1. High density pneumatic compaction** with eight closely-spaced rubber rolls. Rolls are mounted in pairs on torsion springs for controlled oscillation, producing *uniform* densities despite surface irregularities. Compactive pressures up to 100 psi can be applied.

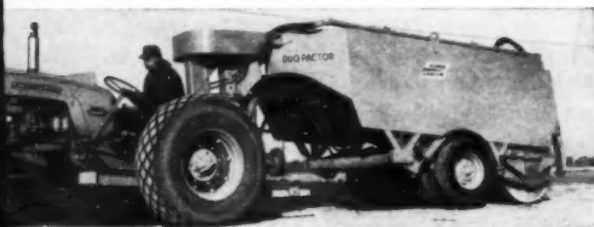
**2. Smooth steel roll** (without vibration), presses in materials between rubber roll tracks, thus unifying densities across the entire rolling width and attaining speci-

fied densities in fewer passes. Also used for smooth steel rolling on crushed rock and gravel bases; seal-coating; bituminous, cement, and other soil stabilizations.

**3. Dynamic, heavy impact, vibratory compaction**—a heavy tamping steel roll—compacts a wide range of soils as well as granular materials *at production speeds*.

**The TRI-PACTOR has been job-tried and service proved.** On one recent airport runway extension job for jet plane requirements, it proved the *only* equipment able to produce base course densities over 100% modified AASHO at production speeds. *If you are faced with difficult compaction problems—if you want to increase earthmoving profit margins through lower compaction costs, write or phone today!*

**CHOICE OF PRIME MOVERS.** Wheel tractors adaptable for modification include International Harvester, Minneapolis-Moline, J. I. Case industrial type tractors now approved. Can be specified for DUO-PACTOR and TRI-PACTOR. Write for details.



Large diameter prime mover drive wheels provide maximum traction . . . minimum surface pressure. Propel TRI-PACTOR easily through loose fills, sand, up steep grades, etc.

Write for informative bulletins



... giving complete TRI-PACTOR SPECIFICATIONS; also Duo-Pactors with midship or trailing steel roll, with regular, dump, or water-ballasted bodies. Choice of prime movers.

Seaman-Gunnison Corp., Dept. RS  
2763 S. 27th Street, Milwaukee 15, Wis.

Phone: ORchard 1-0114

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| <input type="checkbox"/> Utility Scraper | <input type="checkbox"/> Duo-Flo Bituminous | <input type="checkbox"/> Hydro-Jet               |
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Title \_\_\_\_\_

Company \_\_\_\_\_

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City \_\_\_\_\_ State \_\_\_\_\_

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White Oak Excavators meet the deadline at Hogback Dam:

## Texaco Plan lets White Oak lube



**THESE SIX TEXACO LUBRICANTS**, shown here with White Oak Excavators' Vice President, John Toffolon, and H. F. Porter, Texaco representative, permit their rig to lubricate all major equipment.

### Contractor reports Texaco Simplified

RIVERTON, CONN.—White Oak Excavators, contractors for Connecticut's Hogback reservoir dam, have found that the Texaco Simplified Lubrication Plan makes their truck-mounted lube rig more useful than ever before.

"The Texaco Plan is really essential to getting the best use of our lube rig," says John Toffolon, one of White Oak Excavators owners. "Our Texaco Plan calls for just six lubricants to handle everything on the spread. We can take our whole lubricant inventory right out into the field. That's especially important to us because we use equipment made by practically every manufacturer."

Using no more than six lubricants on this \$4,225,000 project has other advantages, too. For example, smaller inventory (six lubricants instead of 15 or 20) means less



**HOGBACK PROJECT** involves an earth and rock-fill dam to supply water for the greater Hartford, Conn. area. It is 135 feet high and 800 feet wide, and will create a 6½-billion gallon reservoir on the west branch of Connecticut's Farmington River. The dam is designed to discharge 92,000 cfs. It also has a 3 mile tunnel to the Barkhamstead reservoir, and a diversion tunnel designed to carry flood waters up to 31,500 cfs. White Oak Excavators are moving about 600,000 yards of gravel, earth and sand; 500,000 yards of rock; 95,000 yards of impervious soil core; and 30,000 yards of concrete. This requires a full range of construction equipment, all fully protected by the six lubricants comprising the Texaco Simplified Lubrication Plan.

# rig handle all field lubrication

Lubrication Plan "essential to best use of lube rig"

handling, less storage space, less chance for misapplication. And, of course, the Texaco Simplified Lubrication Plan developed for the Hogback project comprises lubricants specifically chosen to meet the requirements of that particular job.

Here are the six lubricants, shown at the left with Mr. Toffolon: (1) For engines: *Texaco Ursa Oil Heavy Duty*; (2) for chassis, wheel bearing and general grease lubrication: *Texaco Marjak Multi-Purpose 2*; (3) for hydraulic units: *Texaco Regal Oil R & O*; (4) for transmissions and differentials: *Texaco Meropa Lubricant*; (5) for wire rope and open gears: *Texaco Crater*; (6) for

track rolls: *Texaco Track Roll Lubricant*.

You'll save time and money by letting a Texaco Lubrication Engineer work out a Simplified Lubrication Plan tailored to the specific requirements of your project. Just call the nearest of the more than 2,000 Texaco Distributing Plants, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



**LUBRICATION IS A MAJOR FACTOR IN COST CONTROL**

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

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**ROADS AND STREETS, March, 1959**

# NORTHWEST

## MODEL



## NORTHWEST

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

**SHOVELS**  
¾ Yd. to 2½ Yd.  
Capacity

**CRANES**  
12-Ton to 30-Ton  
Capacity

**DRAGLINES**  
¾ Yd. to 2 Yd.  
Capacity

**PULLSHOVELS**  
¾ Yd. to 2½ Yd.  
Capacity

**TRUCK CRANES**  
25-Ton and 35-Ton  
Capacity



- ① A new 25-D handling steel on a Southern bridge job
- ② Another of the many 25-D Pullshovels now in service
- ③ The 25-D is fast and smooth on clamshell work



# Again-

## A STILL FINER 3/4 YARD MACHINE

In keeping with Northwest's program of constant refinement Northwest announces a still finer tool—the 25-D, an advanced ¾-yd. machine as a Shovel, Crane, Dragline or Pullshovel supplemented by the Northwest 25-D, 18-ton Lifting Crane. This Northwest will make many new features available.

- New Independent High Speed Worm Boom Hoist
- True power load lowering
- Longer, wider crawlers
- Larger Drums—greater cable capacity
- Larger Drum Brakes and Clutches
- Larger Uniform Pressure Swing Clutches
- Improved "Feather-Touch" Clutch Control for still easier operation
- Grouped Lubrication

These are just a part of the new advances in the design of this workhorse of the ¾-yd. field that you can add to the many exclusive features always available on Northwest machines.

Don't buy a ¾-yd. machine without getting the whole story on the 25-D.

**NORTHWEST ENGINEERING COMPANY**  
1504 Field Building, 135 South LaSalle Street  
Chicago 3, Illinois



On those rock jobs the 25-D means even greater output.

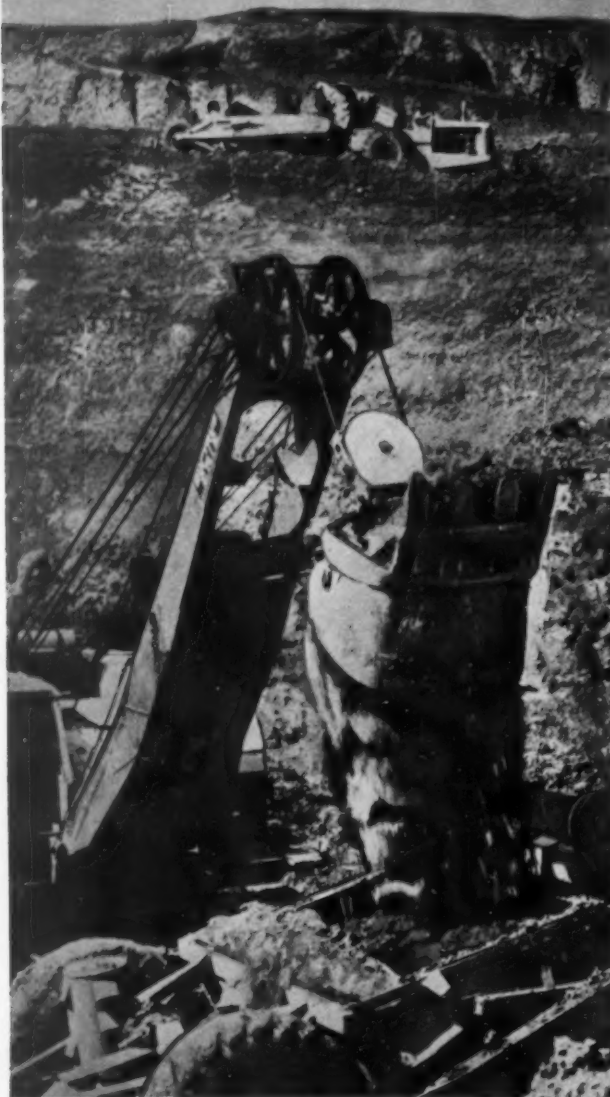


**ASK for**  
complete details  
on this still finer  
**NORTHWEST!**

4 GREAT NEW  
ENGINES IN THE

all purpose

(20 TO 1650



THE GM DIESEL  
ALL-PURPOSE  
POWER LINE  
20 to 1650 H.P.

in only 8 cylinder sizes

NON TURBOCHARGED RATINGS



NEW

"2-53"  
20 to 47 H.P.



NEW

"2-71"  
33 to 67 H.P.



NEW

"3-53"  
38 to 97 H.P.



NEW

"3-71"  
51 to 118 H.P.



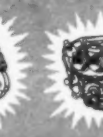
NEW

"4-53"  
51 to 130 H.P.



NEW

"4-71"  
69 to 167 H.P.



NEW

"6V-53"  
76 to 195 H.P.

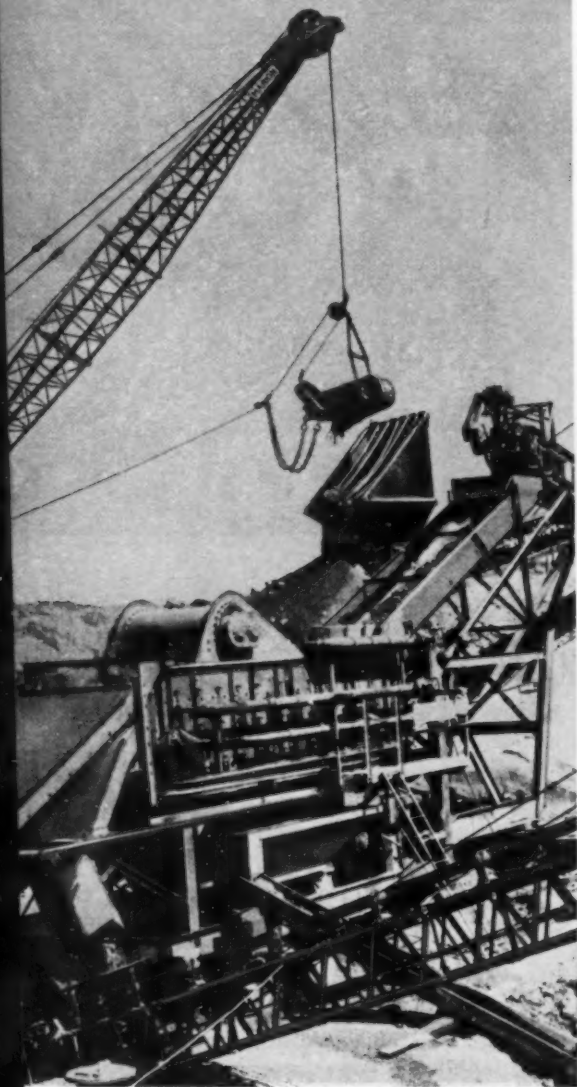


NEW

"6-71"  
112 to 252 H.P.

# power line

H.P. IN ONLY 3 CYLINDER SIZES)



## The V-71 "Jimmy Diesels"

NEW FOR THE CONSTRUCTION INDUSTRY  
6-, 8-, 12-, and 16-cylinder "V" versions of the  
famous GM Series 71 Diesel

The new V-71 "Jimmy" Diesels are a further illustration of GM Diesel's mighty new power concept—rounding out the All-Purpose Power Line—yet retaining the GM Diesel family relationship and parts interchangeability.

Here are engines that combine every profit-making, cost-saving advantage any Diesel has ever had. Diesels that boast an ingeniously engineered combination of new compactness, lightness, high efficiency, durability and inexpensive maintenance.

These V-71 "Jimmy" Diesels are available in 6-, 8-, 12-, and 16-cylinder models rated from 112 to 675 h.p. plus 24- and 32-cylinder "Twins" up to 1650 h.p., when turbocharged. They're itching to get to work wherever there's hard work to be made easy.

To see how these new members of the All-Purpose Power Line meet your needs, write GM Diesel, Dept. C-3, Detroit 28, Michigan.



# GM DIESEL

DETROIT DIESEL ENGINE DIVISION,  
GENERAL MOTORS, DETROIT 28, MICH.

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario  
Parts and Service Worldwide



NEW

"6V-71"  
112 to 232 H.P.



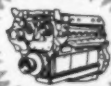
NEW

"8V-71"  
150 to 334 H.P.



NEW

"6-110"  
160 to 335 H.P.



NEW

"12V-71"  
224 to 504 H.P.



NEW

"16V-71"  
300 to 675 H.P.



NEW

"24V-71" (Twin 12)  
448 to 1008 H.P.



NEW

"32V-71" (Twin 16)  
600 to 1350 H.P.  
(Turbocharged - 1450 H.P.)

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**These Job "Supers" and Operators with comparison proof can tell you:**

## **Planet-steered "24's" lick conditions too tough for clutch-steered crawlers**



**Ethan Smith, Superintendent  
for W. S. Fowler Construction  
Co., Oneonta, Alabama, reporting:**

"My 20 years as operator, dirt foreman, and superintendent tell me International TD-24 dozers are really something for pioneering—especially in sidehill cuts through shot rock. Planet Power steering keeps the loaded blade in the sidehill without rear end slippage. And when we use the Torque-Converter TD-24 for pushing, it heaps the bow full fast by crowding the push block, ever through shot rock." The job: Working on a 3-mile section of new U. S. Interstate 31, in Blount County, Alabama—with 1,100,000 cu. yd. to move, including 350,000 of rock



**Don Doyle, TD-24 operator  
for Funderburk, Anderson  
& Stone, Sutherlin,  
Oregon, speaking:**

"We are completing a tough rock road here where another machine (20-ton track-type machine of different make) tried and failed. The Torque-Converter and especially the TD-24 (planetary) steering system made this possible. We can side-cast and move out rocks other equipment can't possibly move." Contractor is building 17 miles of Forest Service access road into primitive mountain country—using two International TD-24 Torque-Converter crawlers for the pioneering and other dozer work.



**States Edward A. Schultz, operator  
for John Schultz Contracting Co.,**

Westbury, Long Island, New York: "The TD-24 Torque-Converter is easy to operate and also easy on equipment being push-loaded. It outworks any equal-sized tractor I have ever operated." Picture shows the Schultz TD-24 bulldozing large boulders from acreage being developed for a subdivision.



**Superintendent Roy Allen, for  
George Grimmert, El Paso, Texas,**

**says:** "Our International equipment forms the backbone of our construction machinery fleet. The TD-24 Torque-Converter pusher is excellent, heaping on loads in 30 to 45 seconds whether the push is straight or curving. The 'live' track, power steering puts TD-24 performance in a class of its own." The contractor is providing 100,000 cu. yd. of fill dirt for a 490-home project in Fort Bliss, Texas.

**See how your operators** can give you new tough-job efficiency—can hand you paydirt dozing dividends of up to 50%—on Planet Power-steered International TD-24 crawlers. Prove what it means on benching, bank-cutting, or side-casting to command full-time "live" power on both tracks. Measure the advantages of Planet Power steering when dozing, pushing and pulling—eliminate "dead-track drag" on the turns—have instant, on-the-go Hi-Lo power-shifting! Call your International Construction Equipment Distributor for a demonstration!

**International®**

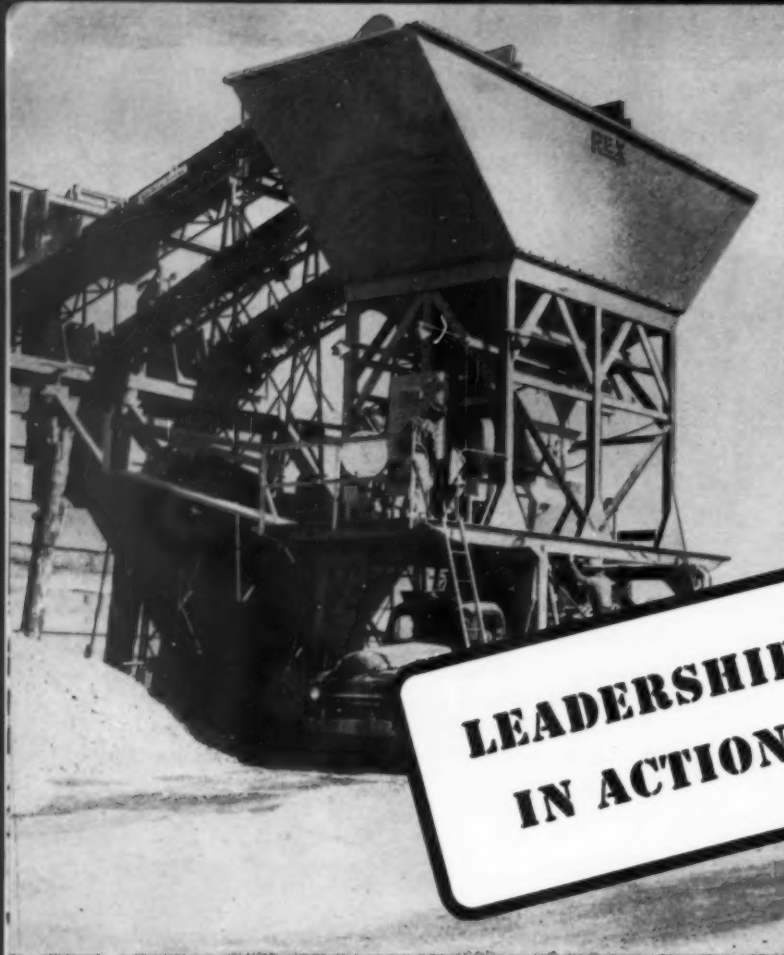
180 N. Michigan Ave., Chicago 1, Ill.



**Construction Equipment**

**A COMPLETE POWER PACKAGE:** Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom-Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

... for more details circle 338 on enclosed return postal card



**LEADERSHIP  
IN ACTION**

## Enters paving field with Rex Bins and Batchers

A leading general contractor in the Northwest area recently branched out to concrete road paving work. Applying the same careful equipment-buying methods which contributed to its steady growth, this organization selected Rex Cement and Aggregate Batching Equipment (in addition to a complete Rex Road Paving Spread).

The 125-ton, 3-compartment Rex Aggregate Bin was located so that the hopper could be charged by truck. Fully automatic controls provide instant, accurate weighing of the three types of aggregate—loading batch trucks in seconds! The Rex Aggregate Bin and Cement Batch

Lift came complete, ready for fast setup and operation.

Located nearby, a 400-barrel Rex Cement Bin with extra ground storage silo of 600 barrels supplies all cement requirements for the job. Fully automatic controls give instant, automatic weighing of cement for the batch trucks. An enclosed 16" x 7" bucket elevator of 450-barrel-per-hour capacity with 12" under-track screw conveyor supplies the two storage silos.

This Rex Bin and Batching package provided a stock, factory-built equipment answer to the contractor's specific needs for aggregate and cement weighing and batching—all at one low cost.

**SEE HOW YOU** can profit from the infinite varieties of Rex Bin and Batching setups. Ask your Rex Distributor or write CHAIN Belt Company, 4652 W. Greenfield Avenue, Milwaukee 1, Wis. In Canada: CHAIN Belt (Canada) Ltd., 1181 Sheppard Ave. East, Toronto, Ontario. Distributors in all principal cities of the world.

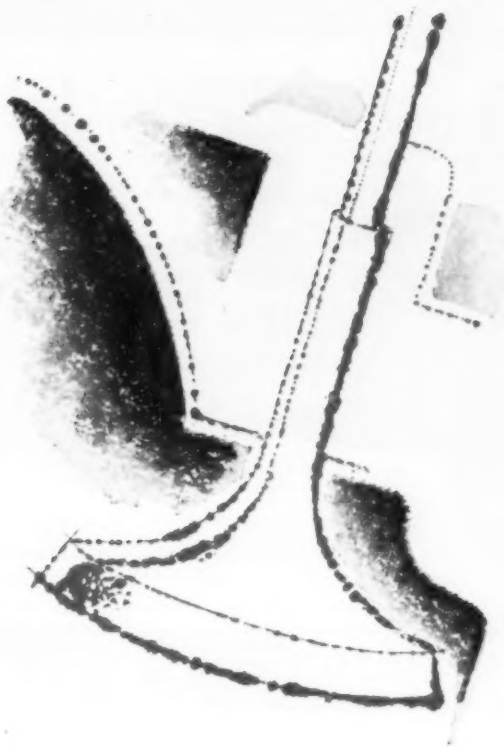
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16

# REX<sup>®</sup>

CONSTRUCTION MACHINERY

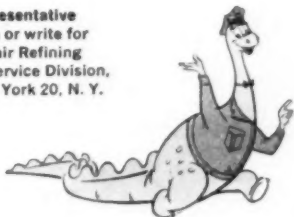
ROADS AND STREETS, March, 1959



## Valves... Oil... and How to Save Money

Valves which open and close hundreds of times a minute can cause lost money, time and power when deposits and wear start to take their toll. Sinclair Tenol® Oils fight deposits and wear—help keep vital parts working longer without repair. Refill with Tenol now. Next time management asks how you've cut costs, tell them you've switched to Sinclair—and show them the results.

Call your Sinclair Representative for further information or write for free literature to Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. There's no obligation.



# SINCLAIR

## Tenol® Oils



## Everything's changed but the trademark on the bearings

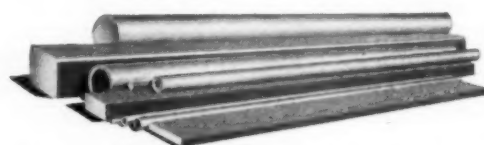
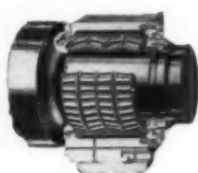
**B**UILT by the St. Louis Motor Car Co. in 1899, this car was the first equipped with Timken® tapered roller bearings. It's still running. And today every make of American car but one uses Timken bearings. The things that the trademark "Timken" stands for haven't changed. It still means the highest quality, the best-known name in bearings, and the kind of service

you can't get anywhere else. It means better performance with longer life and less maintenance in machine tools, steel mills, heavy construction machinery, farm implements and tractors—wherever wheels and shafts turn.

"Timken" is a registered trademark that identifies all products of The Timken Roller Bearing Company—tapered roller bearings, fine alloy steel

bars, seamless steel tubing and removable rock bits.

It's to your advantage to remember that "Timken" is not a type of product. It's your assurance of the best in tapered roller bearings, fine alloy steels and removable rock bits. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable: "TIMROSCO".



TAPERED ROLLER BEARINGS • REMOVABLE ROCK BITS • FINE ALLOY STEEL

# TIMKEN®

## first in quality for 60 years

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## ROADS AND STREETS

Sixty-Six Years of Editorial Leadership

# Washington News Letter



Exclusive - By Duane L. Cronk, Director, Highway Information Services

March 10, 1959

The Bureau of Public Roads toted its books up to Capitol Hill last month to give its annual report to Congress on the progress of the National Highway Program. In a document staggering with statistics, Federal Highway Administrator Bertram D. Tallamy told the national legislators that 11,463 miles of the Interstate System has now been completed or is under construction.

The roadbuilding industry should note that this figure includes 5,079 miles of toll roads and free roads built to Interstate standards (or partially to 1975 traffic needs) before the accelerated road program was launched July 1, 1956. Another set of figures Administrator Tallamy passed on to Congress is a better indicator of the accomplishments of the first 2½ years of the program. Among other things, he reported:

- That \$944.4 million of work has been completed since July 1, 1956, including 3,159 "project miles" of grading, paving or other construction, and 2,087 bridges.
- That contracts have been let and work is under way on another \$2,851.4 million. Total "project miles" in this category is 4,574 miles, plus 4,520 bridges.
- That preliminary engineering (surveys and design) and right-of-way acquisition is complete or under way on \$1,827.6 million in other projects.

\* \* \*

Work has not lagged on the regular ABC systems, Mr. Tallamy maintained. He indicated that \$3,557.2 million in work on the federal-aid primary, secondary and urban systems has been completed during this period, and another \$2,514.5 million put under way. The former includes 60,112 project miles and 10,217 bridges, and the latter, 18,765 project miles plus 4,648 bridges.

As for the special emergency anti-recession program, \$60.3 million in work has been completed, and \$564.1 million is now under construction. (These projects must be completed by December 1959.)

Actually, another less-publicized Bureau of Public Roads report released last month may be more meaningful to contractors. This is the summary of 1958 contract awards. BPR data presented in this report (confirming exclusive report in January Roads and Streets) indicates that:

Interstate System awards jumped \$424 million - about 40 percent over awards during 1957. The 1958 lettings totaled \$1.5 billion.

(continued on next page)

ABC System awards were \$2,039 million - an increase of \$689 million, or 50 percent over 1957. (This includes projects let under the \$600 million "anti-recession" program.)

The BPR's review of state highway department compaction specifications is well under way. John Laing, equipment specialist in the Bureau's Division of Development, says the agency decidedly favors "end-result" requirements in this area rather than those tied to a particular type of machine.

"Equipment is becoming obsolete so fast these days that highway designers who insist on telling the contractor just what he must use may be depriving themselves of better work at lower prices."

About ten states have moved to "end-results" types of specifications in recent years, others are currently revising their procedures. Mr. Laing cited Colorado's compaction requirement for embankments as exemplary, typical of the thinking the BPR would like to see adopted widely. The specification reads: "The contractor may use any type of compaction equipment he deems necessary to obtain the specified density." (Detailed report elsewhere in this issue.)

\* \* \*

Highway leaders are watching with interest an experiment with super-size trucks on the New York Thruway and Massachusetts Turnpike. The toll road officials have granted permission for several firms to put 98-ft.-long double-bottom combinations into operation for trial runs. The big truck-trailers will pull gross loads up to 127,000 lb., so it was necessary to obtain assurance from Washington that federal-aid payments to the states would not be jeopardized by the test. (The Highway Act of 1956 freezes gross weight limits at 73,280 lb.)

Toll road officials have written a number of safeguards into the experiment. The trucks must be sufficiently powered to maintain minimum road speeds of 20 mph on all grades, must not exceed 50 mph, or 20 mph under hazardous road conditions. The men who drive the big rigs must have no-accident records over at least 5 years, and were even investigated for records of law violations. Special insurance provisions were required.

Some of the super tractors are powered with Cummins 335 hp diesel engines, twice the hp of most truck-trailer combinations on the toll roads, and pull two 40-ft. Fruehauf semi-trailers. Others are International Harvester and Autocar tractors.

\* \* \*

The experiment is important to highway men because it pulls back the curtain on what will undoubtedly be one of the great developments of the next few years, the emergence of the commercial highway. Rail transportation is declining in importance; highway transportation is emerging as the major means of moving goods. In their eagerness to win support for more federal-aid highway funds, road engineers and economists have done much to develop the concept that highways are an integral part of our industrial plant - an extension of the assembly line. The new dependence of the National Highway Program upon highway user revenues closes the gap to create a cycle of more highways for more trucks - larger and heavier than ever.

The inherent merits of highway transportation can be appreciated by the men who design and build the Interstate roads. But they recognize, too, that such developments as are taking place on the Massachusetts Turnpike and the New York Thruway will some day play a role in determining what design standards they will build to and who will pick up the tab.

**B.F. Goodrich**



## Why contractor calls B.F. Goodrich tires "the best tires for the job!"

**K**ILLIAN-HOUSE CO. constructs roads and bridges within a 100-mile radius of San Antonio, Texas. 143 pieces of rubber-tired equipment are at work, including 30 flat bed trucks, 10 scrapers, 24 dump trucks, 30 pick-ups, 12 road rollers and 12 water trucks. The company uses B.F. Goodrich tires on this fleet because, says Partner Jack House, "They are the best tires for the job."

For example: Traction Express tires average 75,000 miles of service where previous makes gave considerably less; Tractor Grader tires are being retreaded as many as 4 times; on the new Rock Service Tubeless tires above, the company estimates retreads will save them 30% over other makes.

The new B.F. Goodrich Rock Service

tire has an enormous, double-chevron tread that defies rock cuts and bruises, grips the ground for full traction in forward or reverse. Under the tread is the B.F. Goodrich FLEX-RITE NYLON cord body that withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. This is why the FLEX-RITE NYLON body outwears even the extra-thick Rock Service tread, can be retreaded over and over.

See your B.F. Goodrich Smileage dealer today and find out how you can save on tires for all types of off-the-road jobs. He's listed under Tires in the Yellow Pages of your phone book. *B.F. Goodrich Tire Co., A Division of The B.F. Goodrich Co., Akron 18, Ohio.*

*Enter the B.F. Goodrich Truck Tire Mileage Contest. You can win a Thunderbird or Corvette or one of 310 other prizes. See your B.F. Goodrich dealer for entry blanks.*



# B.F. Goodrich *truck tires*

ROADS AND STREETS, March, 1959

© The B. F. Goodrich Company

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Over two tons of stump and dirt, yet the International® Drott TD-9 4-in-1 "clams" on to this unwieldy load, and easily lifts it for loading on the truck. Boulders, chunks of concrete, similar heavy, bulky one-piece objects that won't go in a straight bucket are quickly and easily handled with the big-capacity clam-action 4-in-1!

**Clam-action 4-In-1 "takes over" where straight buckets falter!**



**"Carry-type scraper" action** gives inch-close grading accuracy, lets the earth "boil" into the bucket for convenient loading and fast disposal. You can't compare erratic old-style straight-bucket loader performance to depth-controlled work like this! And you can also use 4-in-1 "carry-type scraper" action to strip and spread materials with inch-close accuracy!



**Use easily controlled clam action** to fill the 4-in-1 with elusive loose materials (like this crushed stone) —in one fast gulp! Many owners use this speedy load-in-place clamshell action for close-quarters loading. Also, for positive clean-up on building projects, to practically eliminate need for hand-shovel labor!

**See how versatile 4-in-1 clamshell action** takes over on job after job where single-action, old-style straight bucket or limited duty rigs can't possibly compete! Try the 4-in-1 as excavator-loader and as earth-rolling bulldozer. Prove to yourself that only a clam-action 4-in-1 gives you job opportunities, unlimited. See your International Drott Distributor for a demonstration.

... for more details circle 337 on enclosed return postal card

International Harvester Company, Chicago 1, Illinois  
Drott Manufacturing Corp., Milwaukee 15, Wisconsin



**INTERNATIONAL**  
**DROTT**



*Time-light camera shows!*

# Which shovel-crane produces more?



Follow the light lines. They show the "long reach" moves an operator makes with conventional controls to complete a hoe cycle, then shift from swing to travel, steer right and left and shift back from travel to swing. Such "arm's-length" work with slow mechanical or booster systems adds seconds to every move, drains operator strength, cuts end-of-the-shift output.



No reaching, no yanking . . . just easy, "keyboard" operation with Speed-o-Matic controls and Independent-Swing-and-Travel when performing the same operations as the hoe with conventional controls. Short-throw levers speed cycles, up output, conserve operator strength. Ask the man who has worked both controls. He'll pick Speed-o-Matic every time!

## *Speed-o-Matic power hydraulic controls increase output by decreasing cycle time and reducing operator fatigue*

Pushing a shovel-crane at its highest limit all shift long is easy with Speed-o-Matic power-hydraulic controls.

And Speed-o-Matic—standard on all Link-Belt Speeder shovel-cranes—is the original fingertip, flick-of-the-wrist system.

Hydraulic pressure assures the same fast, smooth response *all day*, without adjustments . . . and with perfect feel of the load at every lever position.

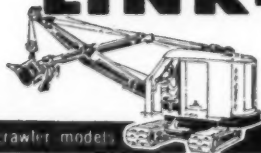
And Speed-o-Matic power-hydraulic controls are only one of the many Link-Belt Speeder advantages. Others include—

- GREATER USABLE HORSEPOWER
- FULL-FUNCTION DESIGN tailors the machine to the job . . . permits more standard and optional features such as Independent-Swing-and-Travel.
- BONUS CRANE CAPACITY when using long booms at extended radii.

For complete details on why your best shovel-crane investment is a Link-Belt Speeder, contact your distributor or write LINK-BELT SPEEDER CORP., Dept. RS-258, Cedar Rapids, Iowa, for book 2553.

14,708

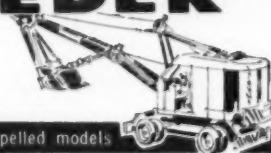
## LINK-BELT SPEEDER



18 crawler models



6 truck-crane



4 self-propelled models

*It's time to compare . . . with a Link-Belt Speeder*

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## PERSONALS



Elmer S. Barrett

### Elmer Barrett Elected Head of Photronix, Inc.

Elmer S. Barrett was elected president and chief engineer of Photronix, Inc., of Columbus, Ohio, an engineering service organization specializing in aerial photogrammetry and electronic computation. He succeeds Everett

S. Preston, who has severed connections with the company he founded to become Ohio's director of highways.

Mr. Barrett was also elected chairman of Barrett Associated Engineers, a consulting engineering partnership associated with Photronix, Inc., and formerly known as E. S. Preston Associates. He will continue in his own consulting engineering firm, Elmer S. Barrett Associates of Chillicothe, Ohio.

### Expand Michigan Highway Department Management

A top-level reorganization in the Michigan state highway department has been recommended by Commissioner Mackie.

A new position would be created, that of managing director of the department, directly under the commissioner, plus a director of engineering and a director of administration. This set-up would replace the present two deputies.

Howard E. Hill, recently deputy for engineering, has been recommended for the managing director post. Fred E. Tripp, executive assistant to the Commissioner, for administrative director, and John E. Meyer, recently director of route location, is named as director of engineering. All positions would be established by Civil Service.



Col. Wright Hiatt

COL. WRIGHT HIATT, CORPS OF ENGINEERS, U.S.A. (ret.) has been appointed as managing engineer for the Atlantic-Gulf Division of The

## STAY ON TOP TODAY—THE ROAD KING WAY

### Do You Have These Jobs To Do With Your Motor Grader?

1. Old worn out grades to reshape.
2. Gravel over the shoulders to be retrieved.
3. Wet slippery slopes to be finished on new roads.
4. Ditches that can not be reached because of overhanging trees.
5. Wet plugged up ditches that will not drain.
6. Washouts in the shoulders and slopes to be filled.
7. More miles to maintain that you can handle with your present equipment.

### While Doing These Jobs, Do You Have These Problems?

1. Bearing trouble in tandems from excessive slope work.
2. Getting stuck in wet ditches.
3. Cutting up tires on culverts.
4. Paying out too much for hand labor finishing new grades.
5. Maintenance costs of roads too high.
6. Unable to meet completion dates because of wet weather.
7. Unsatisfied tax payers using the roads.



In many applications the ROAD KING sloper attachment can be the answer to all your problems and many more.

All we ask is that you let us give you the name and address of the nearest ROAD KING sloper owner in your territory. You will be very pleased to hear of the profit making experience he has had from his Road King sloper.

SEND US YOUR NAME AND ADDRESS and we will send you a booklet on the ROAD KING SLOPER along with the name and address of your nearest sloper owner and distributor.

## NORTH CENTRAL ROAD EQUIPMENT COMPANY, INC.

P. O. BOX 70, NEW ULM, MINNESOTA

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Proved again and again over the roughest, rockiest going in all the world, **GENERAL** Truck Tires are NYGEN® - built to get every job done faster and for less whether it be in logging, construction, quarrying or mining.

Specify GENERALS on your new equipment

**THE GENERAL TIRE & RUBBER COMPANY, AKRON, OHIO**



**for heavy, high-speed traffic:**

# LACLEDE HIGHWAY REINFORCEMENT

The new Mark Twain Expressway, sweeping into St. Louis from rapidly-expanding northwest suburbs, will relieve a troublesome traffic-congestion problem. As it nears the downtown district, this modern freeway will be elevated for approximately one-half mile, spanning some of the city's most heavily traveled streets.

In this overpass alone, more than 700 tons of Laclede reinforcing steels have been used. And in many other highway projects throughout the midwest, Laclede steels are imparting the strength and durability needed to carry today's high-speed, high-volume traffic.



General Contractor: Mary Construction Co., Cape Girardeau, Mo.



**LACLEDE STEEL COMPANY**

SAINT LOUIS, MISSOURI

Producers of Steel for Industry and Construction

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**High-capacity, internally-driven hydraulic pump** operates heavy-duty International Wagner backhoe and loader. Backhoe trenches to grade, as deep as 13¼ feet.

## THE HUSKY NEW INTERNATIONAL® 460 UTILITY DELIVERS real bite at the backhoe bucket!

**What a power house** for high capacity trenching and loading!—look at the score card:

**Typical operating weight of 5,015 pounds\***—3,185 on the rear wheels—means built-in brawn that lets the big backhoe cylinders go all-out to bite fast and clean in tough-to-dig materials. It means built-in *stamina* for less downtime, higher production, *lower cost per cubic yard* of materials handled!

**Then add new Multi-Range 6-cylinder power**—gasoline, Diesel, or LP Gas—to this built-in brawn . . . you step into a *new world of utility tractor performance!*

\*With 175-lb operator, but no added weight or mounted equipment.

**Heavy-duty International Wagner loaders** are available with either conventional or self-leveling bucket control. Big, ¾-cu yd materials bucket can be interchanged with rotary, broom, fork lift, etc.



**Ask your IH Dealer to demonstrate** the 61 hpt 460 Utility, or the other 5 sizes in the International line, 12.8 to 90 bare engine hpt. For name of IH dealer and new catalog, write International Harvester Company, Dept. RS-3, P.O. Box 7333, Chicago 80, Illinois.

†Bare engine hp at standard sea level conditions.



**See your**

**INTERNATIONAL  
HARVESTER Dealer**

International Harvester Company products pay for themselves in use—Farm Tractors and Equipment . . . Trains . . . Commercial Wheel Tractors . . . Motor Trucks . . . Construction Equipment—General Office, Chicago 1, Illinois.

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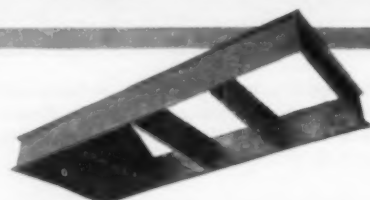
**For faster loading** and other shuttle-type work, the new 460 Utility can be equipped with Fast Reverser unit, providing a reverse speed in each forward gear, each 22 per cent faster than the forward speed.



# THE NEW CLARK TRANS-PLANT



**GIVES YOU A PORTABLE  
UNITIZED BATCH PLANT**

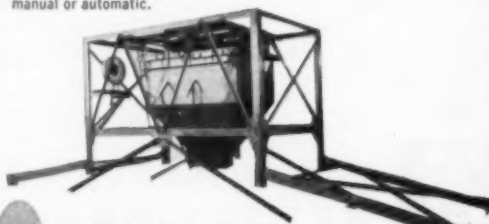


**1** Hopper section with or without extension, compartmentized to suit your requirements for capacities up to 200 tons.



**3** Weigh batchers up to 6 cubic yard capacity to meet any requirements either manual or automatic.

**2** Structurally re-enforced all welded construction for maximum strength.



**4** Simplified structural supports feature hinged columns for quick erection and are designed so drive through can be in either direction.

See your local **Clark dealer**  
for information on the complete  
**Clark line of construction equipment**



*construction equipment division*  
**375 EAST FIFTH AVENUE • COLUMBUS 1, OHIO**  
A DIVISION OF CLARK GRAVE VAULT CO.

... for more details circle 300 on enclosed return postal card

## Personals

Asphalt Institute. With headquarters in New York City, he will direct the Institute's services through district offices covering 20 states.

**HARRY J. TERKER**, founder and president of Terry Contracting Inc., and Terry Steel Contractors, Inc., of Long Island City, New York, died recently. Under Mr. Terker's supervision these companies helped in the building of some of the largest bridges in the metropolitan New York city area, on eastern turnpikes and abroad, with major participation in heavy military construction throughout the world.

**R. B. WINFREY** has been appointed temporary state highway director of Arkansas. He succeeds Herbert Eldridge, who came to that post several years ago from a high position in the Texas highway department.



**Max C. Hempt**

**MAX C. HEMPT**, vice president of Hempt Bros., Inc., of Camp Hill, Pa., has been elected president of Associated Pennsylvania Constructors, state-wide organization of the highway and heavy construction industry with headquarters in Harrisburg. He succeeds F. C. Wagman, Dallastown, who was elected chairman of the Association's advisory board.

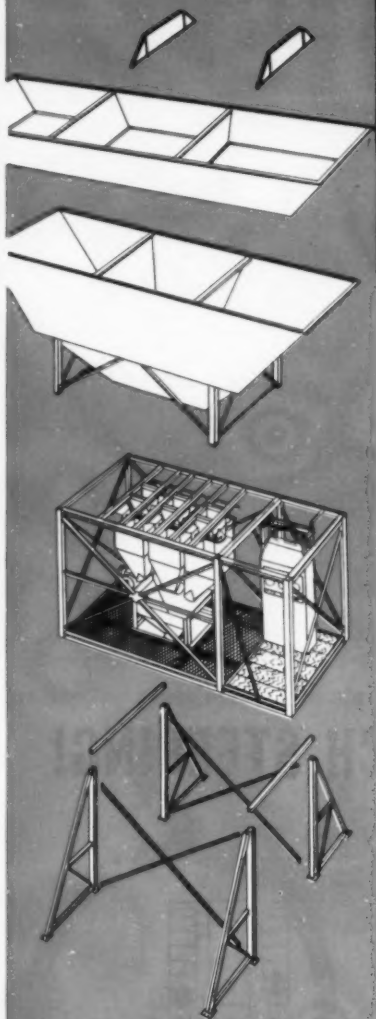
Re-elected to his 25th term as executive-secretary of Associated Pennsylvania Constructors is A. E. O'Brien, Harrisburg. Vice president is W. C. M. Butler, Jr., of Hazleton, and Herbert R. Imbt, State College, is treasurer.

**OTTO S. HESS** veteran engineer-manager of the Kent County Road Commission at Grand Rapids, Michigan has retired after thirty-eight years with that organi-

(Continued on page 33)

Check the portability  
and high production  
capacity you get with

## Johnson® AUTOMASTER-A paving plant



Quick, easy assembly, disassembly and shipment — a minimum number of units — batching and recording equipment remain intact during job-to-job moves — plant erection time, approx. 16 hours — maximum lift is only about 9 tons.



**c. s. JOHNSON co., Champaign, Ill. • Stockton, Calif.**

Division of  
Kochring Co.



Plant driveway is proportioned for largest batch trucks — and is parallel to long axis of bin for clamshell or belt-conveyor charging.

### 120 cubic-yard bin handles 3 or 4 aggregates

New Johnson AUTOMASTER-A brings paving contractors all the latest advantages for high capacity, automatic aggregate batching. Teamed with the companion AUTOMASTER-C dual-batcher cement plant, it makes today's most efficient, easily-erected 2-stop plant — meets the most rigid weighing and recording specifications.

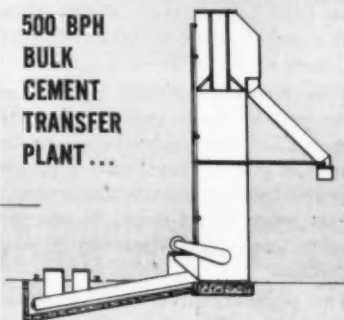
Aggregate bin is available with 3 or 4 compartments. Total heaped capacity is 120 cu. yds. (180 tons @ 3,000 lbs. per cu. yd.). 38 cu. ft. batchers — one for each aggregate — have 3,000-lb. scales, with moisture compensators. The full-reading, springless dial scales are mounted in pressurized cabinet containing heated, filtered air, for extreme accuracy. Gates are air-ram operated with electric control, manual override. 12 preset mix selections are available at the turn of one dial! Plant handles standard 1½-cu. yd. paver batch. Depending on number

of compartments in batch trucks, it produces up to 240 batches of aggregates per hour. (For extreme high production, the Johnson AUTOMASTER-A is available with 2 sets of either 3 or 4 aggregate batchers per set.)

All plant controls are mounted in the pressurized cabinet, along with interlocks, indicator lights, emergency controls. Johnson graphic pen-recorder, with time, date and batch-sequence stamp, also mounts in the scale cabinet. Better check this new Johnson AUTOMASTER series for any 1, 2 or 3-stop operation. Call distributor today.

Here's another time-saver for paving contractors. Low-cost Johnson bulk cement transfer plant unloads railway hopper cars, loads trucks at approx. 500 bbls. per hour with adjustable screw at 10° incline — (600 BPH with screw level). Gasoline or elec. power.

### 500 BPH BULK CEMENT TRANSFER PLANT...



1900



# OLIVER



## TRY IT: NEW "SPOT-TURN" CLUTCH STEERING!

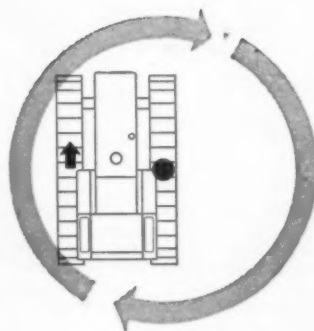
Now Oliver steps even further ahead with a new concept of maneuverability and easy steering.

This newly developed method enables you to make any type of turn from a sharp right-about-face to any degree of gradual turn with a simple, effortless touch of the steering levers. It means more travel-work, bigger production, less fatigue whatever the loads or terrain.

The popular Oliver OC-12, shown above, now offers new "Spot-Turn"

clutch steering as standard to make it the big paying crawler in the 53 d.b. h.p. class. Here's the power to operate a 1½ yd. loader, bulldozer or angle-dozer, or to pull scrapers, graders, rollers, scarifiers and other tools—or to lend a ready assist for scrapers, trucks, etc. Available also with all standard attachments; your choice of gas or diesel power.

You'll find what you've always wanted in the new OC-12—to cut costs on all kinds of road jobs.



**See your nearby Oliver distributor today.**

... for more details circle 359 on enclosed return postal card



**THE OLIVER CORPORATION**

Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio

*a complete line of industrial wheel and crawler tractors and matched allied equipment*

Oliver's advanced "Spot-Turn" clutch steering lets the operator make sharp or gradual turns, or right-about-faces, quicker and easier. Get the facts.



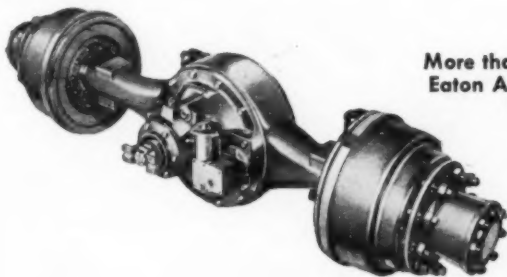
*3 to 10 times  
longer life!*



# EATON INDUCTALLOY AXLE SHAFTS

Eaton Inductalloy Axle Shafts, hardened by the Eaton induction hardening process which produces an extremely hard case that extends deep into the material structure, are able to handle more pounds of torque without fatigue failure. The result is extra thousands of trouble-free miles added to axle life, more vehicle time on the road—less in the shop, and reduced maintenance expense.

The superiority of Eaton Inductalloy Shafts is performance proven by millions of miles of heavy duty operation. Ask your dealer for complete information.



More than Two Million  
Eaton Axles in Trucks  
Today



EATON  
INDUCTALLOY  
SHAFT



ORDINARY  
AXLE  
SHAFT



**EATON** ————— **AXLE DIVISION**  
**MANUFACTURING COMPANY**  
**CLEVELAND, OHIO**

**PRODUCTS:** Engine Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Hydraulic Pumps  
Truck and Trailer Axles • Truck Transmissions • Permanent Mold Iron Castings • Automotive Heaters and Air Conditioners  
Fastening Devices • Cold Drawn Steel • Stampings • Forgings • Leaf and Coil Springs • Dynamatic Drives and Brakes  
Powdered Metal Parts • Gears • Variable Speed Drives • Speed Reducers • Differentials • Centralized Lubrication Systems

... for more details circle 318 on enclosed return postal card

# NEW

## MANITOWOC TRUCK

*... Now you can get the famous Manitowoc crane performance on rubber*

45 TON MODEL 2800

60 TON MODEL 2900

The superior precise control, cycle speed and lifting capacity you get only in Manitowoc crawler cranes is now available in two new Manitowoc truck cranes. With a full 45 ton capacity, the Model 2800 truck crane will easily handle most of your crane jobs. For the bigger, high lift jobs, the Model 2900 has a true 60 ton capacity to meet most any lifting assignment.

Both rigs feature smooth torque converter drive to provide the most accurate control for precise lift work. The double-drum, worm drive independent boom hoist provides more speed in raising and lowering, and equalizes pull on the boom to minimize cable wear. Short throw air controls are available if the rigs are put to dragline or clamshell use. Widespread, sturdy outriggers have heavy duty, bridged-aluminum pads for positive "high lift" stability. Big, rugged carriers travel at highway speeds, give you mobility that can't be matched by many smaller truck cranes.

Your Manitowoc distributor is the man to see for all the profitable advantages you get with these two new Manitowoc truck cranes ... give him a call *now*.

- Simple, power-saving design uses only 14 gears in the upper works. Precise, disc-type swing clutches ... patented, plunger drum control on main clutches.
- Massive ring gear and roller path assembly machined from tough, rolled tire steel.
- Adjustable, self-aligning hook rollers with precise, 12-point adjustment to keep rollers perfectly matched with the roller path.
- Self-removing counterweight is standard equipment. Scientific load distribution assures legal load limit.



Model 2900 60 Ton Truck Crane

# Manitowoc

**MANITOWOC ENGINEERING CORP.**

(A subsidiary of The Manitowoc Company, Inc.)

MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
25 TON - 100 TON	1 1/4-YD. - 5 1/2-YD.	1 1/4-YD. - 6-YD.	1 1/4-YD. - 3-YD.

... for more details circle 353 on enclosed return postal card

## Personals

(Continued from page 28)

zation. Mr. Hess is a nationally known figure in county highway administration, having served actively on committees and in association work.

Succeeding Hess as secretary-manager of the commission is Leonard E. Kaufman, with Martin DeRuiter, veteran staffman, named as chief engineer.

### G. S. Richardson Heads Consulting Engineer Group

The American Institute of Consulting Engineers has elected George S. Richardson, of Pittsburgh, Pa., as president, succeeding Herschel H. Allen, of Baltimore. Mr. Richardson is Senior Partner, Richardson, Gordon and Associates, Consulting Engineers, Pittsburgh.

New members of the governing council are: S. C. Hollister, Dean, College of Engineering, Cornell University, Ithaca, N.Y.; Harold M.

Lewis, Consulting Engineer, New York, N.Y.; and Gerald T. McCarthy, Partner, Tippetts-Abbett-McCarthy-Stratton, New York, N.Y., Consulting Engineers, New York, N.Y.

New association vice-presidents are Emil H. Praeger, Partner, Praeger-Kavanagh, Consulting Engineers, New York, N.Y., and Dean G. Edwards, Partner, Edwards and Kelcey, Consulting Engineers, Newark, N.J.

WILLIAM T. HOLCOMB, assistant state highway engineer of Nevada, has resigned after 39 years of service with the state to head the highway construction division of Wells Cargo, Inc., a contracting firm in Las Vegas. Holcomb has had many honors including the presidency of the Western Association of State Highway Officials.

H. HUDSON MYERS has been appointed an associate engineer with Whitmen, Requardt and Associates, consulting engineers, Baltimore, Md. Prior to joining this firm in 1951 he was designer with the Maryland State Roads Commission.



Russell P. Ellison

RUSSELL ("PAT") ELLISON, veteran Virginia highway leader, died recently in Richmond. He had been executive assistant to the state highway commissioner of Virginia since 1944. In point of service he was the oldest employee in the department, which he joined in 1911. He had risen through various executive posts while maintaining activity in many professional organizations.

## 8 NEW WILLIAMS MODELS



Doubtless you have heard of one, maybe two, of the digger models manufactured by Williams; but did you know that—this is the only complete line of earth-boring equipment available? Whether you need an 8 inch diameter hole 10 feet deep or a 10 foot diameter hole 120 feet deep, there is a Williams available for the job.

OR if you have a drilling problem which is beyond the capacity of standard Williams equipment, our design department will analyze the available data and make suitable special equipment proposals.

**ADH - BDH - MF  
LDH - LLDH - TBDH  
MDHU - LDHU**

Write Exclusive Distributor

**JOSLYN MFG. & SUPPLY CO.**

2101 Corinth St. • Dallas, Texas

for DESCRIPTIVE LITERATURE



Manufactured by

**HUGH B. WILLIAMS MFG. CO.**

8330 Lovett Ave.

P. O. Box 7815

• Dallas, Texas

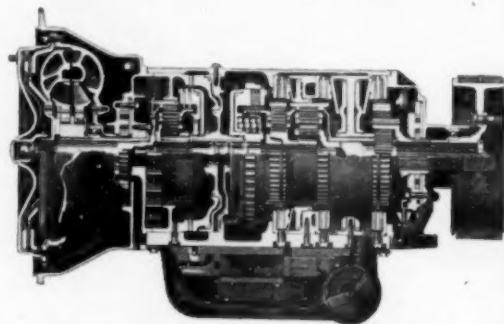
# GMC OPERATION "HIGH



**1** **50% more carrying capacity** with GMC's new Wide-Side pickup! And it's all *truck*—from the tread up! Longer-lasting wood body floor with steel skid strips; double-walled steel construction; heaviest front cross-member—the same used in bigger GMC's!

**2** **Low-cost, dependable POWER** under every hood! You get a wide choice of high-torque, low rpm engines—*truck* built for long, trouble-free performance! M-400 bearings with 7 times longer life plus over 40 extra quality features are standard on GMC Trucks.

**W**HATEVER the job, there's a GMC to do it! Now, from Operation "High Gear", comes the widest selection of cabs, engines, axles, transmissions, frames and wheelbases ever offered! Models from sturdy light-duty pickups to big 45-ton workhorses! They're all new, and all part of the greatest design and engineering program in truck history! Stop in at your GMC Dealer's today and see how new money-saving, money-making advances can pay off for you!



**Start all loads smoother, faster** with Torquatic Drive! Output torque and speed are automatically adjusted to the load, thus preventing engine lugging and stalling. And because driveline shock is absorbed by hydraulic fluid, damage to driveline components is virtually eliminated. For maximum fuel economy, an automatic lockup clutch is provided.

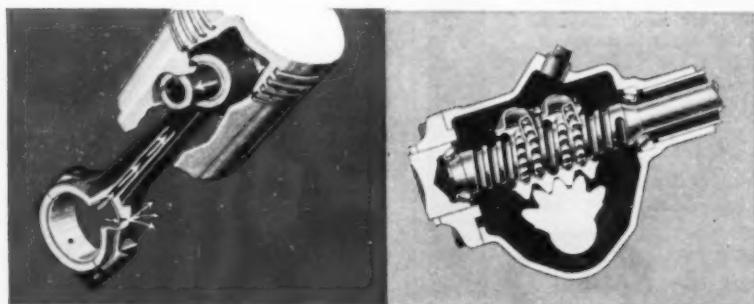


# GEAR" offers you the biggest selection of truck chassis and components for construction work in the industry!



**3** Hauls over 16% more ready-mix on every trip! Tailored to ready-mix needs, this GMC FW556 out hauls anything on the road . . . 7 full yards at a clip within a 46,400 lb. total! For example, on 1,000 cubic yard jobs it saves you up to 24 full trips!

**4** Up to 90,000 lbs. GCW! For hauling big construction equipment and materials, GMC offers the widest selection of six-wheelers in the business! Plus the economical new GMC 6-71SE two-cycle diesel engine—and the best diesel service from coast to coast!

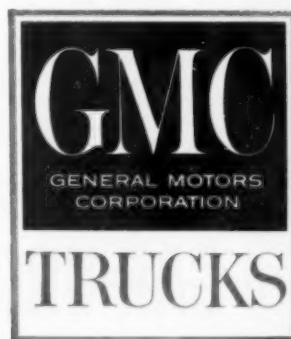


**Rifle-drilled connecting rods** greatly increase engine life! By rifle-drilling small oil leads through the connecting rods, oil pressure is delivered directly to the piston pins, resulting in less engine wear, greater economy!

**Easier steering!** All GMC trucks are equipped with recirculating ball type steering gear as standard equipment. Because rolling contact is maintained between all working surfaces, steering is smooth and easy!

. . . for more details circle 329 on enclosed return postal card

**ROADS AND STREETS, March, 1959**



From 1/2-ton to 45-ton . . .  
General Motors leads the way!

## New Publications

**HIGHWAY NEEDS STUDIES 1958.** Bulletin 194 The Highway Research Board, 2102 Constitution, Washington, D. C. Price: \$1.20. This bulletin contains seven papers presented at a Symposium on the subject at the 37th annual meeting of the board.

## Calcium Chloride Helps Melt the Ice

Ice is not melted fast enough under certain conditions by mere applications of rock salt, according to a bulletin from the Calcium Chloride Association, which advocates adding one part calcium chloride to two parts rock salt. Calcium chloride is reported to give a "trigger action" because as it dissolves it supplies heat; this heat helps the sodium chloride

melt ice, because it absorbs heat as it dissolves.

For data on this subject, write the Calcium Chloride Institute, 909 Ring Building, Washington 6, D. C., for a free copy of the information circular "Ice control."

## Surface Treatment Manual

A practical roundup on principles and methods of asphalt surface treatment has been published by American Bitumuls & Asphalt Company. This 58-page publication, "Surface Treatment Manual," can be obtained by writing the company at 320 Market Street, San Francisco 20, California, or any of the firm's field offices.

The manual while concerned with the company's own asphalt grades, identified throughout the text for various recommended uses, is a good general review of treatment work. In a field where thousands of new people are coming along all the time, and where education in the fundamentals therefore is an uphill job, the manual should be of service in the cause of good construction.

An early chapter counsels the reader to analyze each project for conditions that will affect choice of asphalt grade, rate of application and amount of chip cover. Explained in simple language are the conditions which justify a single or double treatment or a slurry seal. The need for a sound underlying pavement is stressed.

The manual also carries a glossary of terms that will help the reader.

**LIME AND LIME-FLYASH SOIL STABILIZATION.** Bulletin 193, Highway Research Board, 2102 Constitution, Washington, D. C. Price: \$1.00. This bulletin contains five papers presented at the 37th annual meeting of the board.

**RHEOLOGICAL AND ADHESION CHARACTERISTICS OF ASPHALT.** Bulletin 192, the Highway Research Board, 2101 Constitution, Washington, D. C. Contains five papers presented at the 37th annual meeting of the Highway Research Board. Price: \$1.60.

**OUTDOOR ADVERTISING ALONG HIGHWAYS.** Special Report 41. Highway Research Board, 2101 Constitution, Washington, D.C. A 100-page bulletin published under

*designed* WITH CONCRETE IN MIND

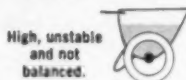
## GAR-BRO CONCRETE CART



Underslung and balanced load.



Weight concentrated at handles.



High, unstable and not balanced.

*... makes a man want to deliver a full load!*

When workmen race to work early just to get a Gar-Bro Cart there must be a difference. And Gar-Bro's balanced design makes that difference.

Gar-Bro Carts are designed specifically for heavy concrete ... are balanced when fully loaded ... are definitely lighter at the handles. They are easier to push, easier to maneuver, easier to control and pour concrete.

Here is a cart that is 25% lighter in weight than other carts; that will handle 30% more load with half the effort and yet it costs no more.

See your Gar-Bro dealer or write for catalog!

**GAR-BRO MANUFACTURING CO.,** Los Angeles, Calif. • Peoria, Ill.  
General Offices: 2415 East Washington Blvd., Los Angeles 21, Calif.

# GAR-BRO

CONCRETE  
HANDLING  
EQUIPMENT



THE WORLD'S MOST COMPLETE LINE

... for more details circle 327 on enclosed return postal card

# SHRINKING PROFITS OR A BETTER RETURN ON INVESTMENT?

## *3 answers to the problem*

With more bidders . . . low bid prices and rising costs . . . the pinch on profits demands a closer look at all phases of your operations. One of the surest ways to improve your profit picture is to use modern earthmovers with big power, big capacity and big performance. When considering equipment you have to weigh facts against fiction. The facts on these three big "Eucs" prove that they can cut your earthmoving costs and bring a better return on your investment.

# TC-12

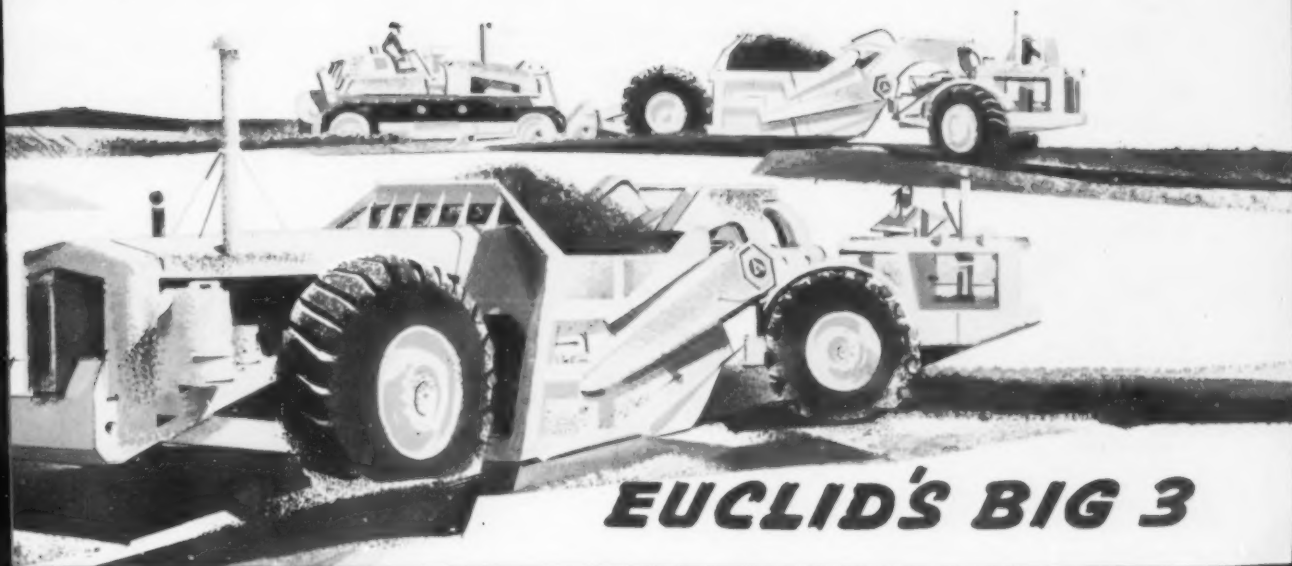
**TWIN-POWER  
CRAWLER**

# S-18

**21-YD.  
SINGLE ENGINE  
SCRAPER**

# TS-24

**24-YD. "TWIN"  
SCRAPER**



## **EUCLID'S BIG 3**

**Functional "years-ahead" design  
results in 5 major advantages**

**TWIN**

**TC**

**12**

**CRAWLER**



**Best all-around performer in its class!**

**21 to 30 yds.**

**S**

**18**

**SCRAPER**





**1. Twin Engines**, with a total of 425 net h.p. and separate Torqmatic Drives, permit a completely new concept of crawler design. The TC-12 is years ahead of other tractors in its work-ability for push-loading, dozing, ripping and other big tractor work.

**2. Independent Track Drives** provide almost unbelievable mobility and maneuverability. With separate power trains and Torqmatic Drives, each track can work all of the time with its individually controlled speed and power . . . a big advantage for dozing and push-loading and for work on steep side slopes.

**3. Easy, Fast Operation** is achieved by Torqmatic Drives . . . one for each track. There's no master clutch . . . change from one speed range to another is made under full power . . . pivot turns can be made fast by

reversing direction of one track. Operator has excellent visibility to front and rear, convenient controls and ample room for comfort.

**4. Track Alignment** is constantly maintained because each track is rigidly positioned to its main frame . . . each half of the tractor oscillates on a big diameter transverse shaft forward of and independent of the final drive.

**5. Unitized Assembly of Major Components.** Exceptional accessibility and unitized assembly of converter, transmission and drive case components, result in less downtime. For example, both drive sprockets can be removed and replaced in about one-third the time required for a competitive big crawler . . . final drives in just a fourth of the time.



Here's a big power, big performance team that paces the field in low cost yardage . . . the S-18 "Euc" Scraper of 21 yd. struck capacity and the TC-12 Twin-Power Crawler. With 425 net h.p. delivered to the power train and a separate Torqmatic Drive for each track, the TC-12 is the most powerful, most mobile crawler for push-loading. The S-18 loads fast and has a 336 h.p. engine with Torqmatic Drive and converter lock-up for high travel speed, outstanding grade-ability and efficient use of engine power.

**Big Capacity** of 21 yds. struck, 24 yds. at 3:1 slope and 30 yds. at 1:1 in the low, wide bowl originated by Euclid. By actual scale weight on job after job "Euc" scrapers carry more payload pounds than other scrapers of the same rated capacity.

**Converter Lock-up** with the 4-speed Torqmatic Drive assures maximum efficiency on grades and long, high speed hauls. The direct drive provides more usable power from the 336 h.p. engine without sacrificing the advantages of the torque converter.

**Structural Strength** without excess deadweight is built into the S-18 for long service life when push-loaded by the biggest tractors. Simple, rugged construction

from push block to cutting blade results in lower maintenance and greater dependability.

**Hydraulic Controls** for all scraper operations—bowl, apron and ejector—eliminate the expense and downtime caused by cable breakage. All controls are fast acting and completely independent . . . permit controlled spreading of the load and non-stop dumping.

**Out-in-the-Open Accessibility** of all major components saves maintenance time . . . "package" disassembly helps get the machine back in production faster when repairs are required. Planetary drives and differential can be serviced without removing the wheels . . . engine, torque converter and scraper jacks are out in the open with easy access for servicing.

TWIN

TS

SCRAPER



### ***More work-ability than any other scraper***

**Twin-Power** permits the use of two torque converters, each driving a separate axle, to handle big loads under adverse conditions. Maximum usable horsepower of each engine is always available. Either or both engines can be used according to job requirements.

**All Wheel Drive** enables the "Twin" to self-load in most scraper materials . . . to pull out of soft sand . . . climb steep grades . . . to work when other scrapers bog down. There's no limitation of a power proportioner because each drive axle has its own power train.

**Big Capacity** of the "Twin"—24 yds. struck—makes it a high production earthmover. Heaped capacity at 3:1 slope is 27 yds. — at 1:1 it's 32 yds. The three inde-

pendent hydraulic controls for bowl, apron and ejector give fast, positive action . . . help cut cycle time . . . and there's no downtime due to cable breakage.

**More Versatility** helps beat the profit squeeze. The TS-24 moves the cheapest dirt on big jobs and small ones . . . on work that "can't be done with scrapers" . . . can work independent of other equipment or team up with the TC-12 "Twin" Crawler for the high speed, big yardage projects.

**Exceptional Availability** of the "Twin" is evidence of Euclid's years-ahead engineering that cuts downtime to an absolute minimum. Major components—engines, transmissions, converters, drive axles, hydraulic jacks—are easy to get to for servicing and maintenance.



**EUCLID'S BIG 3 will give you a better Return on Investment.**

*Performance data on the TS-24 "Twin" Scraper, TC-12 Twin-Power Crawler, and S-18 Single Engine Scraper is available from your Euclid Dealer . . . ask him for facts and figures or a field demonstration.*



# **EUCLID**

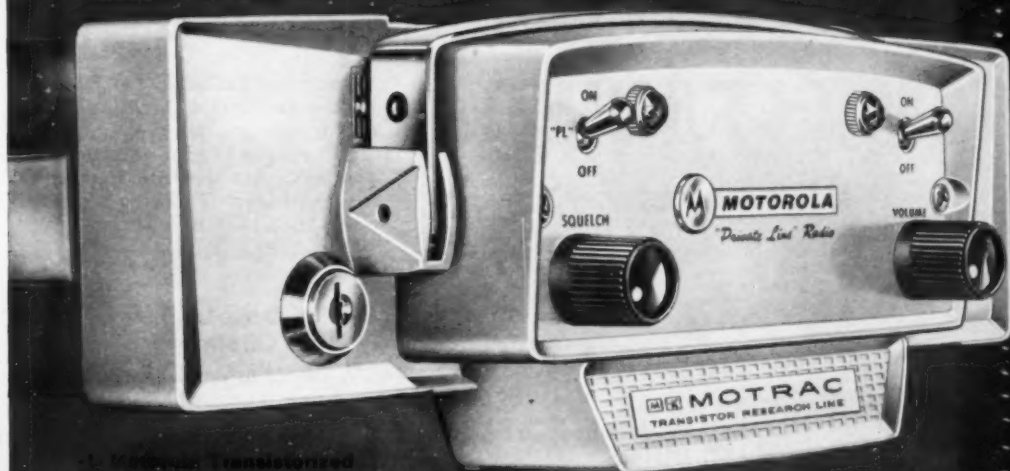


**Division of General Motors Corp.  
Cleveland 17, Ohio**

Printed in U. S. A.

Stand-by" operation on a trickle of current.

# NEW MOTOROLA MOTRAC \* 2-WAY RADIO



**Lower Battery Drain**—No need now for heavy duty batteries and generators. Current drain on "stand-by" is 1/3 that of tube-type receivers, 1/15 with battery saver switch.

**Greater Reliability**—Transistors, printed circuits and new design all greatly increase reliability.

**Smaller, Lighter**—Approximately 1/2 the weight, 1/3 the size of other models. Mounting in tight quarters easier than ever.

## *Completely transistorized receiver and power supply... Another Motorola First!*

Here is 2-way radio with efficiency and reliability never before approached in mobile radio. No more tubes in the receiver —no more vibrators in the power supply . . . all are replaced by long life, dependable transistors. No longer is it necessary to idle the vehicle to keep the radio operating. Savings in gasoline, engine wear and batteries add up fast. Let us prove to you how MOTRAC radio will cut your radio operating costs . . . while giving you reliability never before possible. Write today.

## **MOTOROLA 2-WAY RADIO**

Motorola Communications & Electronics, Inc. • A Subsidiary of Motorola Inc., 4501 Augusta Blvd., Chicago 51, Ill.

MOTRAC is a trademark of Motorola Inc.

... for more details circle 356 on enclosed return postal card

# HIGH IMPACT STEAM CLEANING

gets 6 hours  
maintenance work  
done in  
20 minutes

... faster—easier—better—cheaper

low cost,  
high output



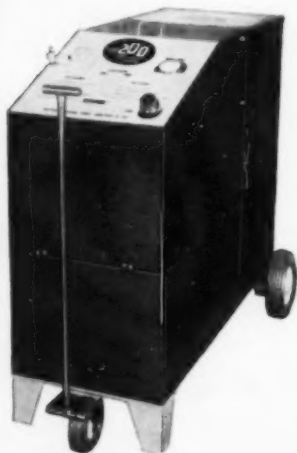
#### Portable, Practical, Efficient!

Cleans off mud, grease, snow, sludge in minutes—keeps bits, drills, equipment and machinery clean and efficient—exposes surfaces for thorough inspection. 200 GALLONS PER HOUR AT 120 lbs. per sq. inch. Can supply 2 steam guns at once. Easy to operate. Pays for itself in time saved.

Write for free folder  
and complete information

**VAPOR HEATING CORPORATION**  
80 East Jackson Blvd., Chicago 4, Ill., Dept. 35C

... for more details circle 383 on enclosed return postal card



## New Publications

the Board's Committee on Highway Laws, constituting a comprehensive handbook of this subject.

### Institute Offers Manual on Deicing Abrasives

A new manual has been published on "Calcium Chloride for Abrasive Treatment in Winter Maintenance." It includes data on calcium chloride, recommended procedures for treating, storing, applying and spreading. It also contains helpful charts on the melting action of calcium chloride, and distances required to stop on icy pavements. Available free, on request to the Calcium Chloride Institute, 909 Ringe Building, Washington 6, D.C.

**AMERICAN TRUCKING TRENDS 1958.** A 32-page booklet containing facts and figures on truck operation, a value to highway administrators and planners. Available on request to the American Trucking Association, Inc., 1424 16th Street N. W., Washington 6, D. C.

### Device Doubles Life of Tire Chains

A simple fishhook-like device for attaching crosschains to sidechains on ordinary vehicle tire chains is said by the Army to increase tire traction, double crosschain life, and decrease to a couple of minutes the time required to change a broken crosschain.

As described in an Army report, the "removable swivel hook" resembles a sturdy, barbless fishhook with a mushroom-shaped head topping the shank. The hooks swivel in the links of the sidechains and are hooked, point out, to the crosschains.

The report, PB 151290 *Test of Removable Swivel Hooks for Tire Chains*, R. N. Cuevas, Jr., Aberdeen Proving Ground, U. S. Army Ordnance Corps, Aug. 1957, may be ordered from OTS, U. S. Department of Commerce, Washington 25 (price 50 cents).

UNIT CRANE & SHOVEL CORPORATION has announced the appointment of Vernon B. Barnes as director of marketing and J. W. Lenahan as sales manager.

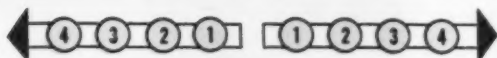


**only  
the**

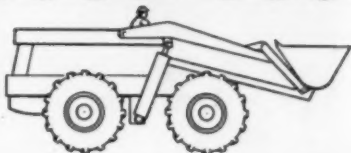
# HYDRA-DRIVES® BDB

**OFFERS ALL THESE MAJOR ADVANTAGES**

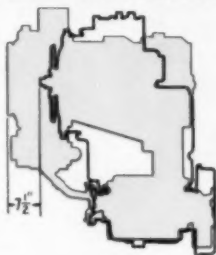
**IN FULL-POWER SHIFT TRANSMISSIONS**  
for equipment from 60 to 175 h.p.



**1** 4 speeds forward and reverse. All power shifted! Provides maximum horsepower to load under all load conditions.

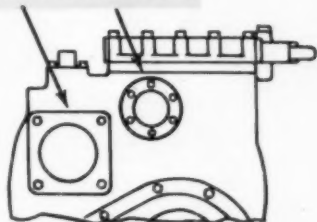


**2** Integral design. Torque converter, transmission, oil passages, valving and oil sump are in one compact housing—7½" shorter than comparable models.

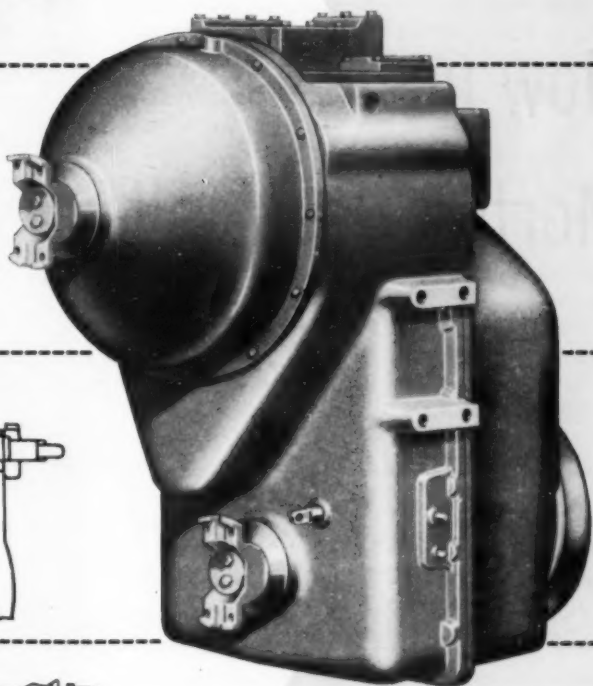
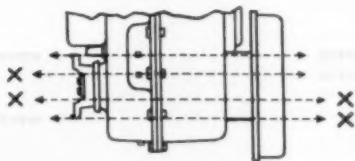


**4/5 ENGINE SPEED**

**3** Dual reduced speed pump drives. Pumps can be driven at engine speed or 4/5 engine speed for longer life and increased horsepower to pump load. Single pump drive is also available.



**4** Full disconnect provides four combinations of split drive . . . from torque on both shafts, to both shafts in disconnect.



**SPECIALLY  
DESIGNED  
FOR SMALLER  
INSTALLATIONS**

Rockwell-Standard's new model Hydra-Drives Full Power Shift Transmission is now available in sizes especially designed for smaller installations, such as front end loaders, fork trucks, scrapers, crane carriers, rubber tire tractors and military vehicles.

In addition, the Hydra-Drives BDB offers easier servicing and maintenance. There are fewer moving parts and bearings. The simple, rugged countershaft design and spur gears simplify maintenance.



ROCKWELL-STANDARD CORPORATION  
TRANSMISSION AND AXLE DIVISION  
DETROIT 32, MICHIGAN



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. . . for more details circle 363 on enclosed return postal card

# Now use Morton Rock Salt all year long for safer streets and

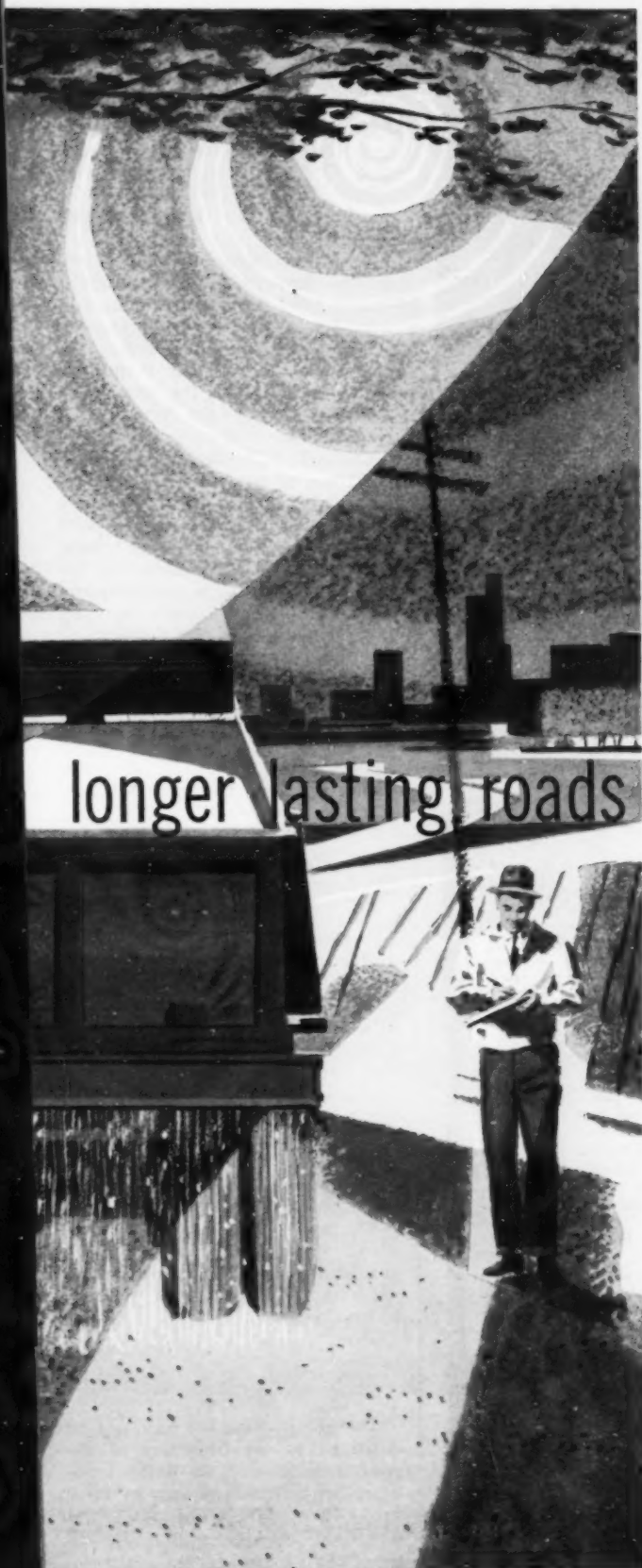
The best, most economical way to help keep your streets safe during winter months is to use straight Morton Rock Salt.

Straight Morton Rock Salt gives **abrasive traction** against skidding before it starts to melt the ice. Morton Rock Salt crystals are larger than other commonly used ice melting chemicals and **penetrate ice deeper** with a corkscrew action—not just melt surface ice. This better penetration means Morton Rock Salt reaches the pavement fast and quickly **melts** the bond between ice and street surface.

#### **Morton Rock Salt is safe, clean, economical**

Straight Morton Rock Salt is non-toxic. It does not damage animals' paws, rubber, fabrics, leather, asphalt, brick or properly seasoned concrete. It will not clog sewers or leave a rutted, dirty pavement as will sand and cinders. What's more, Rock Salt **melts more ice at lower cost** at any temperature above 8° F. than any other commonly used ice melting chemical.





longer lasting roads

You reduce aggregate loss, save man-hours and maintenance costs when you stabilize your roads with Morton Rock Salt.

Secondary roads stabilized with Morton Salt give more service per dollar than roads built by any other method—and the savings in aggregate alone more than pay for the salt. You get smooth, durable, water-repellent surfaces that require minimum maintenance.

Stabilizing the base course of primary roads with Morton Rock Salt helps prevent the 9 out of 10 road failures which result from faulty foundations.

Stabilizing shoulders with Morton Rock Salt not only checks erosion and rutting, it reduces dust and eliminates accidents caused by soft shoulders. You also save on grass and weed removal.

#### **Road stabilization ends problem of winter salt carry-over**

The proven value of salt stabilized roads means city, county and state highway officials no longer have the problem of how much rock salt to order for ice and snow removal. Now you can order an adequate amount of rock salt for winter protection. If you have a milder winter than anticipated, the extra rock salt can be put to excellent use for summer road stabilization projects.

#### **Mail coupon today!**

I would like free additional information about the advantages of using Morton Rock Salt for both ice and snow removal and stabilizing roads.

Name

Title

Address

City  County  State

**MORTON SALT  
COMPANY**

INDUSTRIAL DIVISION

Dept. RS-3, 110 N. Wacker Drive, Chicago 6, Illinois



... for more details circle 352 on enclosed return postal card

**ROADS AND STREETS, March, 1959**

# DOTMAR

*helps you  
cut costs  
2 ways!*

## 1 DOTMAR CURB AND GUTTER PAVER

The only versatile paving machine on the market today! Lays up to 10' per minute of finished curb and gutter curb alone, combination gutter, curb and walk, median strip or drainage gutter. Saves 1/3 to 1/2 over old hand methods. Paves any curb and gutter section. Tamps, strikes-off and compresses concrete. Increases concrete yield. The original paver. Our 12th year serving the construction industry. Send for literature.



## 2 DOTMAR MAGNALITE FORMS

Cut costs because workers can handle and set up more forms per day with no strain. Magnolite Curb and Gutter Forms are made of tough magnesium alloy. A 12" x 10' form weighs only 47 lbs.—one third the weight of steel. More forms transported with lighter equipment. Send for data.

MAKERS OF DOTMAR AIR ACE PNEUMATIC HAMMER AND TOOLS

# Dotmar INDUSTRIES Inc.

501 HANSELMAN BUILDING

KALAMAZOO, MICHIGAN

... for more details circle 316 on enclosed return postal card

**NOW! FASTER**

**TESTS . . . MORE**

**TESTS . . .**



**... WITH  
THE SAME  
MANPOWER!**

... for more details circle 387 on enclosed return postal card

## WASHINGTON Dens-o-meter

THE KEY TO ACCURATE FIELD TESTS FOR MOISTURE DENSITY IN EMBANKMENT AND FOUNDATION SOILS.

The DENS-O-METER is light in weight, compact, very portable, easy and economical to operate and maintain!

Developed after years of research by Department of Highways, State of Washington. Opens up entirely new possibilities for foundation and soils engineers and contractors who can now make accurate moisture-density and compaction tests, quickly and easily.

- in small or large holes up to 3 ft. deep
- in all types soils and granular base materials
- in approximately 3 minutes after hole is dug

CONTRACTORS AND ENGINEERS: Stop over-compaction, under-compaction . . . make moisture density determinations many times daily with a DENS-O-METER.

Get full information from  
Exclusive Sales Agents

**Charles R. Watts Co.**  
4121 Sixth Avenue Northwest  
Seattle 7, Washington

## New Safety Record for New York Thruway

A low record fatality rate of 0.88 deaths for each 100,000,000 vehicle-miles traveled was established on the New York State Thruway during 1958. This is compared with 1.94 in 1957, and is believed to be the best figure for any comparable expressway.

Only seventeen deaths occurred on the thruway system during the year. The 0.88 figure compares with 5.9 for the nations highways, 4.9 for all New York State thoroughfares, 3.3 for the Pennsylvania turnpike, 1.9 for the New Jersey turnpike, and 1.3 for New Jersey's Garden State Parkway.

Colonel Clinton B. F. Brill, chairman of the Thruway Authority attributes the low rate to continued strict enforcement of speed limits and other rules and regulations by the state police; the increased experience of motorists and truckers using the facility; and the thruway's superior safety design.

In the latter category, protective guide-railings have been installed around all bridge piers, and an increased use made of reflective striping at interchanges and along the pavement edges. The thruway also has an exceptionally wide center medium or maw.

## Four Wheel Drive Celebrates 50 Years With Name Change

The Four Wheel Drive Auto Company, Clintonville, Wis., marked its 50th birthday by changing its name to FWD Corporation. Stockholders of this manufacturer of heavy-duty trucks and other specialized vehicles voted to adopt the new name at their annual meeting January 13, four days after the 50th anniversary of the company's incorporation which took place January 9, 1909.

The name was changed in order to avoid misleading connotations, it was said by Maurice E. Ash, president. "FWD has not made an auto since 1912 and now makes many types of vehicles in addition to four wheel drive."

DONALD D. KING has been named Assistant to the Secretary of the American Society of Civil Engineers with headquarters in New York City. Mr. King previously served on the ASCE staff as an editor of Civil Engineering.



**Chosen By The  
New York State  
Thruway**

**ALLIED Jet Seal**

NIAGARA FALLS

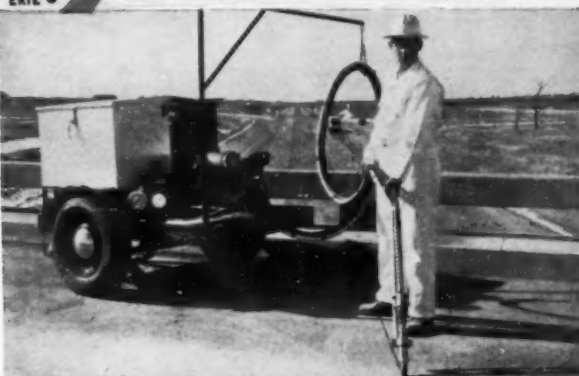
BUFFALO

ROCHESTER

SYRACUSE

UTICA

ALBANY



Original special equipment, exclusively developed by Allied, automatically proportions, mixes and places JET SEAL in a few continuous operations.



Allied JET SEAL is available in five-gallon pails for easy handling, maximum protection and handy storage.

The New York State Thruway, originally stretching 427 miles from New York City to Buffalo, is being extended five ways—to Erie, to Niagara Falls, to Massachusetts, to Connecticut, and to New Jersey.

To protect the tremendous investment in this modern highway, the Thruway Authority seeks only the best materials for construction and maintenance. Here, Allied JET SEAL has won distinction as the preferred sealant for protecting the more than 500 bridges and paving structures along the highway. (JET SEAL is also being used to replace the original joint sealing material.)

**Jet Seal is the Original  
Two-Component Polysulfide, Polymer  
Joint Sealing Compound**

- Outstanding for its extreme ruggedness, superior adhesion, cohesion and low temperature ductility. ( $-20^{\circ}\text{F.}$ )
- No cold flow tendencies even at  $200^{\circ}\text{F.}$  or more.
- Easily applied, cures quickly, and is ready for all traffic in one hour.

These are just some of the reasons the Thruway Authority believes that Allied JET SEAL, with its greater life expectancy, is more economical in the long run than the sealants it is destined to replace.

NEW YORK

**ALLIED  
MATERIALS CORP.**

PRODUCERS, REFINERS  
AND COMPOUNDERS  
FOR OVER 25 YEARS

Allied Building  
P.O. Box 7103 • 39th Street Station  
5101 NORTH PENNSYLVANIA  
OKLAHOMA CITY 12, OKLAHOMA

## Heavy Construction Operators

# *Go FORD-WARD* for greater payload... power..

**"Our Ford trucks haul up to a ton-and-a-half more payload per trip"**

*says William R. Collins, V.P.  
William Collins and Sons, Fargo, N.D.*

"We switched to Ford trucks in 1951 because we found we could haul 1½ tons more per trip. Now we have 124 Fords, including 80 T-700's. They're economical to operate, too—we get up to 6 miles per gallon. Our drivers like Ford's power steering and peppy 302 HD V-8 engine. We like Fords because we know we can always get Ford parts quickly if we need them. That means our trucks aren't down over one day, even on a major overhaul."



**"We trade every two years and find that Ford trucks bring highest resale price"**

*says John McCormick, Sec.-Treas.  
Northern Improvement Co., Fargo, N.D.*

"We keep our Ford T-700's in top condition year round, and it pays off. We get a higher resale price when we trade every two years. Fords have the ability to perform under the rugged conditions in our work. Power steering on our tandem dumps makes them easy to handle on-or off-the road."



**"Our drivers like Ford's power . . . they get heavy loads under way fast"**

*says George C. Wilson, General Superintendent  
Schultz and Lindsay Construction Co., Fargo, N. D.*

"Ford's HD power in our T-750's gets heavy loads under way fast . . . helps keep us on schedule. And we can haul bigger payloads doing it . . . up to a yard more, legally, every trip. We've never had frame trouble either. They're rugged, durable trucks and if we ever need Ford parts, we can always get them at the nearest town."

## FORD TRUCKS COST LESS

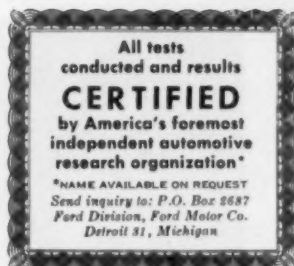
LESS TO OWN...LESS TO RUN...LAST LONGER, TOO!



..resale value!



NOW!  
CERTIFIED PROOF  
FORD TRUCKS  
COST LESS



## '59 Ford Pickups Win Economy Showdown U.S.A. —average 25.2% better gas mileage!

Impartial tests of the 1959 pickup models of all six makes prove conclusively that Ford's  $\frac{1}{2}$ -ton pickups equipped with Short Stroke Sixes are the economy champs for '59.

### HOW TESTS WERE MADE

Standard six-cylinder models of the six leading half-ton pickups first were put through exhaustive road trials. All '59 trucks—Ford and competitive—were bought from dealers, just as you would buy them. After at least 600 miles break-in, all were brought up to manufacturer's recommended specifications.

The trucks were then tested — by America's leading independent automotive testing firm—at constant speeds of 30, 45 and 60 miles an hour. Next came stop-and-go tests, ranging from moderate city traffic to normal retail delivery operation. Acceleration rates were carefully timed in each gear to insure accurate results for all makes.

### HOW NEW '59 SIXES RATE IN GAS MILEAGE

'59 FORD SIXES GIVE	25.2% more miles per gallon than Make "C"	31.1% more miles per gallon than Make "I"	9.6% more miles per gallon than Make "G"	42.6% more miles per gallon than Make "D"	22.0% more miles per gallon than Make "S"	25.2% more miles per gallon than the average of all makes
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The '59 Ford Sixes, in every test, averaged more miles per gallon than every other make! Combining all tests, the '59 Fords led the average of all other '59 pickups by 25.2%.

### WHAT'S THE SECRET?

How can a '59 Ford Six make four gallons do the work of five in other trucks?

**First**, of all pickup Sixes, only Ford has modern Short Stroke design. This new type of engine is basically far more efficient than long-stroke Sixes of other pickups. Example: Ford's Six delivers more usable horsepower than any other pickup Six.

**Second**, to this modern engine Ford has added a new economy carburetor. By metering fuel more precisely in both low- and high-speed ranges, Ford's new carburetor boosts gasoline mileage in every type of driving. And Ford's Economy Carburetor is standard at no extra cost.

Your Ford Dealer now has the complete report of Economy Showdown U.S.A. Why not call or visit him today and get the whole story firsthand?

... for more details circle 323 on enclosed return postal card



A giant Euclid in action—with a 120-ton haul capacity, the world's largest dump truck.

# JOB RECORDS PROVE

## Firestones lower heavyweight haul costs!

Firestone Off-The-Highway Tires deliver new lows in hourly costs on the roughest haulroads in the business! That's because every job-engineered Firestone is built with Firestone Rubber-X, the longest wearing rubber ever used in Firestone tires! Tough Firestone treads and sidewalls defy cuts in rubble and shale. Job-engineered tread designs give the traction you need for any footing. Exclusive Firestone S/F (Shock-Fortified) nylon bodies resist damage from bruising shock and impacts. Call

your Firestone Dealer or Store and ask him about Firestone's full line of tubeless and tubed off-the-highway tires and on-the-job tire service.

©Firestone T.M.

## Firestone

**BETTER RUBBER FROM START TO FINISH**

Enjoy the Voice of Firestone on ABC television every Monday evening.  
Copyright 1959, The Firestone Tire & Rubber Company

**When ordering new equipment always specify Firestone tires—available tubeless or tubed**



Rock Grip®  
Excavator

Super Rock Grip  
Wide Base®

ANS  
Earthmover

Ground Grip®  
Wide Base

Super Ground Grip®  
Road Builder

Super Rock Grip  
Deep Tread

Super Mileage  
Lug Logger

Rib Excavator®

... for more details circle 321 on enclosed return postal card





Geared by FULLER . . .

## Rhodes & Jamieson keeps construction materials on the go

Rhodes & Jamieson, Oakland, California, produces about 5,600 cubic yards of wet mix construction material every day. To keep this "perishable" material moving on schedule, the company runs each bottom dump truck in its large fleet on two 9-hour shifts, and gives each a preventive maintenance check every week.

Tough schedules and tougher hauling conditions call for the best in equipment. That's why Rhodes & Jamieson officials are so pleased with

the performance and reliability of the Fuller Transmissions in their big fleet. Typical of the equipment used by the company are the following trucks:

80 International RF-192 ready-mix trucks with 5 and 7-yard mixers, equipped with Fuller 5-C-65, 5-speed Transmissions.

22 International D-405 double bottom hopper dump trucks, with Fuller R-96 10-speed ROADRANGER® single-stick Transmissions.

3 International RD-450 6x6 C.O.E.

units with 7-yard mixers, equipped with Fuller R-46 semi-automatic ROADRANGER Transmissions, featuring 8 closely-spaced forward speeds, shifted by a single lever.

For dependability, ease of operation and economy, Rhodes & Jamieson specifies Fuller Transmissions. There is a Fuller for *your* job. Ask your truck or equipment dealer for more information on the Fuller Transmission best suited to meet your specific operating requirements.

# FULLER

TRANSMISSION DIVISION  
MANUFACTURING COMPANY

KALAMAZOO, MICHIGAN

Subsidiary EATON Manufacturing Company



Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla. Automotive Products Company, Ltd., Brock House, Langham Street, London W.1, England, European Representative

... for more details circle 322 on enclosed return postal card

ROADS AND STREETS, March, 1959

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## JOB SAFETY

### Novel "No Passing" Signs Tried in Iowa

The Iowa State Highway Commission recently installed approximately 600 experimental "No Pass-

ing Zone" signs on US 30 near Missouri Valley, Iowa.

The new 3' x 4' pennant shaped signs, on the left side of the road are expected to give motorists more sight distance when following and attempting to pass other vehicles.

Most drivers tend to drive toward the center of the road when preparing to pass. The new no passing signs, shaped like an arrowhead, will point toward the begin-

ning of the present yellow line mark in the center of the pavement. With the signs on the left shoulder, drivers have almost unlimited opportunity to detect no passing zones even when forward vehicles obscure yellow line markings.

Use of the point system in Iowa enforcement, which penalizes motorists for crossing the yellow lines, has intensified the need for advance warning of no passing zones. Sight distance from the new low model cars has made detection of the flat yellow lines increasingly difficult.

Additional signs throughout the primary system will not be installed until the effectiveness of this initial experiment can be determined.

### ROCK FILL FOR KINGS RIVER DAMS drilled out with Brunner & Lay carbide Rok-Bits



Courtright Dam: Brunner & Lay Rok-Bits used practically 100% in drilling out rock fill here, after some trial and error. Crawler type drills at Wishon Dam fitted with Brunner & Lay Rok-Bits also.



Kings River hydraulic system includes three dams and two generating stations. Connecting tunnels drilled out with Brunner & Lay 1 1/2" Rok-Bits.



As the solid blue granite fractures easily on the "shot", small diameter hole centers were set at 7 x 8", bottoming at 2 1/4". Brunner & Lay 600 "X" Rok-Bits used for this tough work.

Kings River contractors insist that blast hole drilling be continuously efficient—20 hours a day—and economical. Their use of Brunner & Lay carbide Rok-Bits is a good reason for you to check with Brunner & Lay on your drill bit and drill steel needs. Call your dealer, or our nearest plant. Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. 76 progressive years. Sales & Shop Service: Philadelphia, Asheville, Birmingham, Dallas, Albuquerque, Denver, Los Angeles, Sacramento, Portland, Seattle, Lachine, P.Q., Dorchester, Mass.



Sectional rods in 3/4" and 1" hex alloy and 1 1/4", 1 1/2" and 2" round carbon steel. Also standard alloy and carbon drill steel. All standard threads. Serviced at our many plants.

Brunner & Lay Rok-Bits in cross, chisel, "X", cutaway, taper-socket types. In standard wagon and hand held drill threads—also 1,000; 700; 600; 400; 200; J5.23; J5.5; J7.5 threads. Sizes up to 7".

Contracting agent—Pacific Gas & Electric Co.; Contractors—Morrison—Walsh—Perini; Project manager—Bert Perkins.

## Brunner & Lay Products

CARBIDE ROK-BITS • INTRASET STEEL • DRILL RODS • COUPLINGS, ADAPTERS & SECTIONAL STEEL

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● Novel new sign being tried in Iowa.

### Construction Job Safety "Thought for the Day"

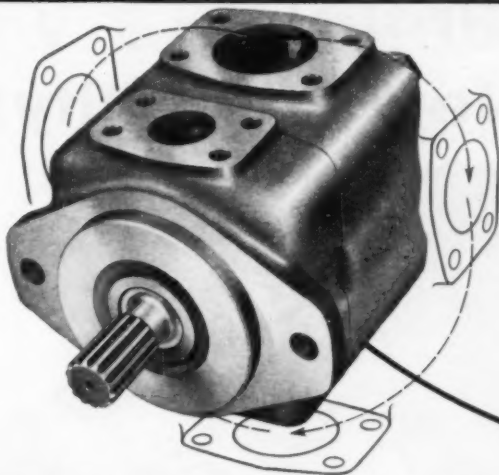
By Maj. Gen. Louis W.  
Prentiss (Retired)

Executive Vice President, American Road Builders' Association

"Safety is a function of command. Every echelon in the chain of command from the owner, manager, job superintendent, and foreman to the lowest assistant foreman is responsible for the safety of the men under his supervision.

"We must have safety officers as technical advisors, but their efforts go for naught unless their counsel is endorsed by management and enforced through the entire chain of command."

From Safety News Letter, National Safety Council.



**third in  
a series**  
BIG HORSEPOWER  
LITTLE PACKAGE

# NEW SERIES 45

PATS. & PATS. PENDING

## VICKERS® "high performance" vane pump

• high speed • high pressure • high efficiency • high service life

**NEW COMPACT DESIGN** . . . much more horsepower than previous pumps of the same package size.

**NEW VANE CONSTRUCTION** . . . positive vane tracking at all operating speeds assures efficient operation at increased speeds and pressures.

**NEW SIZES** not previously available . . . answers mobile equipment designers' need for greater hydraulic horsepower in limited space.

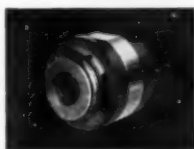
**NEW PARTS INTERCHANGEABILITY** . . . many common parts for single and double pumps (two pumps on the same shaft in one envelope). Lessens inventory requirements.

**NEW 4-BOLT SAE FLANGE CONNECTIONS** . . . will also accommodate user's 2-bolt flanges of the proper design.

**NEW 2-BOLT MOUNTING (SAE 1959 STD.).**

**NEW 4-POSITION COVER** . . . inlet can be rotated in 90° increments with respect to outlet.

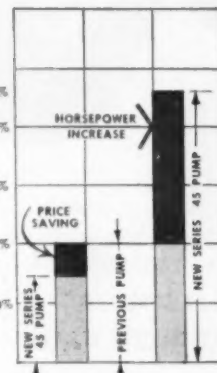
**NEW REPLACEABLE PUMPING CARTRIDGE** . . . all wearing parts of pump are incorporated in one replaceable cartridge. Easy field replacement without removing pump from its mount. Cartridges available in kit form.



### MUCH MORE HORSEPOWER PER DOLLAR

The striking increase in horsepower per dollar of the Series 45 over previous pumps of the same delivery capacity is shown in the graph to the right. Maximum horsepower is more than double (235%) and price is lower by 35%.

This is the third unit released in the new complete line of "High Performance" Pumps, single and double. The first (Series 25) is available in 12, 14 and 17 gpm sizes and the second (Series 35) comes in 21, 25 and 30 gpm sizes (at SAE rating of 1200 rpm and 100 psi). This new Series 45 pump is available in 35, 42 and 50 gpm sizes.



The table below shows characteristics

Model Number	Delivery—gpm		Input Horsepower @ 2000 rpm 2000 psi	Package Size†	Weight
	1200 rpm 100 psi	2000 rpm 2000 psi			
2V35A-1*10	34	52	71	L. 7¾" W. 6¼" H. 6½"	69 Lbs.
2V42A-1*10	41	63	86		
2V50A-4*10	48	75	103		

†Exclusive of Shaft Extension and Mounting Lobes

8201

Write for new illustrated Bulletin No. M5108 for further details and performance characteristics.

## VICKERS INCORPORATED

DIVISION OF SPERRY RAND CORPORATION

Mobile Hydraulics Division

ADMINISTRATIVE and ENGINEERING CENTER

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Application Engineering Offices: • ATLANTA • CHICAGO • CINCINNATI  
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AREA (El Segundo) • MINNEAPOLIS • NEW YORK AREA (Springfield, N.J.)  
PHILADELPHIA AREA (Media) • PITTSBURGH AREA (Mt. Lebanon)  
PORTLAND, ORE. • ROCHESTER • SAN FRANCISCO AREA (Berkeley)  
SEATTLE • ST. LOUIS • TULSA

ALSO SOLD AND SERVICED IN AUSTRALIA, ENGLAND, GERMANY & JAPAN  
IN CANADA: Vickers-Sperry of Canada, Ltd., Toronto, Montreal & Vancouver

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

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ROADS AND STREETS, March, 1959

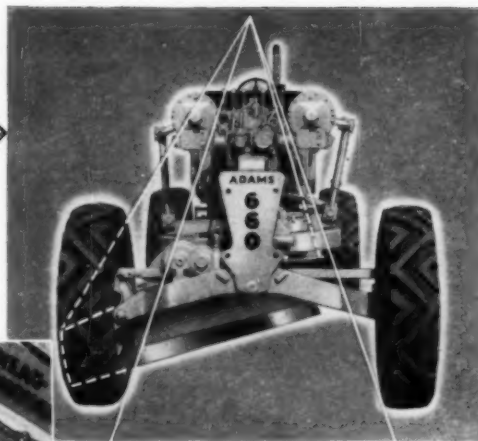
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# New Big Circle! New Visibility!



## HERE IS VISIBILITY PLUS! →

Your operator can see straight ahead as well as both ends of blade where visibility counts!



← Big 63" CIRCLE with "straight-down" lift links assures positive, accurate blade pressure.

→ Save time in the field with new moldboard tilt adjustment. To make desired adjustment, just loosen one nut on each circle leg.





# New Easy Blade Adjustment!

Check these major changes in L-W graders  
... together with proven L-W quality features,  
they're your best bet for profits in 1959

*Now, the world's finest graders are even better! New 1959 LeTourneau-Westinghouse motor graders, now in production, offer you these important new features:*


**FULL-SWEEP VISIBILITY** ... sitting or standing, your operator can see straight ahead and both ends of the blade, where full visibility counts!

**NEW BIG CIRCLE** ... 63" overall diameter, none bigger in the industry! Wide-spaced circle legs assure stable blade control.

**EASY TILT ADJUSTMENT** ... your operator makes only one easy adjustment on each circle leg to change tilt of blade. New universal mounting simplifies field installation of slide or power-shift moldboards.

There are *more* changes ... including enclosed ball-socket lift-link caps and a *new 6-cylinder engine* for 3 models ... plus all of the proven *speed* and *power* advantages that have made L-W graders the standard of the industry for years.

See your L-W Distributor *now*. He has full facts on the grader that can make your grading operations more *profitable* this year.



Here's the 190-hp **POWER-Flow® 660** ... one of seven sizes of L-W graders now available, with from 60 to 190 hp. **POWER-Flow** models offer full torque-converter transmissions; other L-W graders offer transmissions with 8 forward speeds, 4 reverse, and 3 optional creeper speeds ... unmatched by any other grader!

G-2126-DC-2



**LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS**

*A Subsidiary of Westinghouse Air Brake Company*

**Where quality is a habit**

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## Meetings

**NATIONAL ASSOCIATION OF COUNTY OFFICIALS**—Urban County Congress, Mayflower Hotel, Washington, D. C.; March 15-18.

**ASSOCIATION OF HIGHWAY OFFICIALS OF NORTH ATLANTIC STATES**—Annual Meeting, Hotel Traymore, Atlantic City, N. J.; March 18-20.

**MISSISSIPPI VALLEY CONFERENCE**—State highway departments, Edgewater Beach Hotel, Chicago, Ill.; March 19-21.

**TENNESSEE ROAD BUILDERS ASSOCIATION**—Annual Conference, Nashville, Tenn.; March 26-27.

**PURDUE ROAD SCHOOL**—45th annual, Purdue University, Lafayette, Ind.; March 30-April 2.

**AMERICAN WELDING SOCIETY**—Annual convention and show, Sherman Hotel, Chicago, Ill.; April 6-10.

**OHIO HIGHWAY ENGINEERING CONFERENCE**—Sponsored by department of highways and Ohio state university, University Campus, Columbus, O.; April 7-9.

**EARTHMOVING INDUSTRY CONFERENCE**—Society of Automotive Engineers, Central Illinois Section, Peoria, Ill.; April 14-15.

**FREEWAY OPERATIONS SEMINARS**—Institute of Traffic Engineers (regional series); Moraine Park Hotel, Highland Park, Ill., April 15-17; and Town House Motel, Omaha, Nebr.; April 20-22.

### Status of Continuously Reinforced Concrete Pavement

An appraisal of the progress in the design and construction of concrete pavements continuously reinforced is published in the Journal of the American Concrete Institute, December 1958.

Representing a report of the ACL's subcommittee 325, J. D. Lindsay, Chairman, the report reviews the status of present knowledge gained from test installations and other field data, and makes recommendations for further research.

Perhaps the most important need for research, notes this report, lies in the field of theoretical design.

The relationship of pavement thickness to performance also needs further study. While examples of pavements now in service indicate that it is possible to construct continuously reinforced slabs that will be exceptionally smooth riding, low in maintenance and long in service life, there is not sufficient knowledge states this report to conclude that such pavements will be outstandingly superior to pavements of conventional design.

### Big Salt and Cinders Bill for Turnpike

More than \$120,000 worth of salt and cinders were used on the Pennsylvania Turnpike system during the past winter up until January 21. Snowfall up to that date had totaled 35 inches.

Some 35,000 tons of cinders and nearly 1,000 tons of salt had been put on the 470-mile roadway as of this date.

Rock Salt is distributed at the rate of about 400 lb. per mile of roadway. Calcium Chloride is mixed with cinders and placed at varying rates.



*Gritty mud would mar the markings on most tapes!*

**This Chrome Clad® tape** is Lufkin's 50-foot ANCHOR model. It looks quality in its hand-sewn leather case . . . it is quality.

A special kind of electroplating protects the tape from the damage of mud, sand and grit. The bold black markings are bonded to the steel base . . . protected by layer after layer of electroplating . . . topped by a final coat of tough chromium. Glare free, corrosion resistant, longer lasting—this is the tape preferred by every professional. Available with markings in feet, tenths and hundredths.

**THE LUFKIN RULE COMPANY**  
TAPES • RULES • PRECISION TOOLS

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Push-loaded "D" pumps in heaped load of mixed sand and clay at borrow pit on road rebuilding job between Dunedin and Palm Harbor, Fla. L-W scrapers averaged 8-yd loads in this material, according to contractor's estimates.



## Relocate highway through Florida Swamp

Wet, spongy footing doesn't slow D 'Pulls\*

On the west coast of Florida—in low-lying swamp country between Dunedin and Palm Harbor—4½ mi of old U.S. 19A has been straightened, regraded and repaved by W. L. Cobb Construction Company of Tampa and St. Petersburg. For high-speed earthmoving, Mr. Cobb used 3 rubber-tired LeTourneau-Westinghouse D Tournapulls® with 9-yd scrapers. These "go-anywhere" 'Pulls moved most of the 110,000 cu yd on the job. Other equipment included draglines, crawler tractors, a towed scraper and a motor grader.

To avoid interference with heavy highway traffic during the tourist season, first priority was given to building a relocated 1.5-mi section. To prepare base on this wet, spongy surface, the contractor brought in sand and clay from a borrow pit. An off-road haul route was built to skirt the swampy area and avoid the busy highway.

Push-loaded for 70', "D's" averaged an estimated 8 yd per load. They hauled

3,440' to swampy fill area, spread in 50'. Average cycle time for L-W 'Pulls on 1.3-mi cycle was 6 min, 58 sec.

### Mud-and-water veterans

"Ever since we bought our 3 L-W Tournapulls," said W. J. McMahon, job superintendent, "we've been working them constantly under tough conditions—in mud and water. Their performance has been entirely satisfactory on all our jobs."

G. M. McDaniel, job foreman, agreed: "I haven't a single complaint on these D 'Pulls. They're fast and economical to operate, even in bad weather."

### Roadable, profitable anywhere

Mobile, 29.5-mph D 'Pull can be roaded anywhere in a hurry. It is within the 8' width and axle-load limits for highway travel anywhere without permit.

Ask for full details and a demonstration.

\*Trademark DP-1934-DCJ-1

**LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS**

*A Subsidiary of Westinghouse Air Brake Company*

**Where quality is a habit**

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## Steps to Reduce Claims of Blasting Damage

Numerous complaints and claims, many unfounded, are made by property owners in the vicinity of blasting operations because of perceptible vibrations or concussions and accompanying sounds of the blasts.

A "Construction Safety Hints" bulletin from the National Safety Council makes the following recommendations:

"To minimize the number of complaints and establish a basis for refuting unfounded claims, a contractor should make sure that all blasting is carried out in accordance with accepted safety standards. An audible signal should be given before each blast. Signs explaining the signal procedure should be posted throughout the blasting area.

"Blasts should be controlled so that vibrations reaching nearby structures will be kept within safe limits.

"Published data on the amplitude and frequency of vibrations

sufficient to cause structural damage to various types of buildings (erected in compliance with reasonable construction standards) are available.

"Also available are instruments to measure and record the ground movements following a blast. Interpretation of the records is necessary to determine the intensity of the vibrations. Services of vibration specialists who will supply the instruments and interpret the recordings are provided in some instances by the explosives manufacturer or distributor and by insurance companies. Such services also can be obtained on a fee basis."

The Council's specific suggestions to the contractor include:

1. Measure vibrations of every blast within 1,500 ft. of structures.
2. Maintain records of blasts that detail all pertinent information such as: date and the hour, amount of explosives used, distance from point of blast to nearest structure, etc.
3. Use blasting mats when blasting within 500 ft. of structures or public roads.

## Manual of Signs, Signals, Markings Still Available

Many road building agencies are still wrestling with problems concerning safety in highway construction and maintenance work. It may help to know the existence of a fine study on the subject by a committee of the Construction Section of the National Safety Council.

In September, 1955, this committee, composed of William S. Derrick of the Georgia state highway department and Dale Medsker of Southern General Insurance Co., Atlanta, Ga., prepared a Proposed Manual of Signs, Signals, and Markings for Highway Construction and Maintenance Work. Mr. Derrick also represented the Institute of Traffic Engineers and the Southern Section of AASHTO. Mr. Medsker was chairman of the Engineering Committee, Construction Section, National Safety Council, and a member, Subcommittee on Signs, National Joint Committee on Uniform Traffic Control Devices.

The committee was aided in its work by James E. P. Darrell of the

# KNOW HOW

## More Experience Means a Better Job

... and Southern Tire Company—one of the nation's oldest large tire retreaders—has over 55,000 tires worth of experience in expert retreading and repair service. And speaking of service, Southern Tire's fast pickup and delivery service at your job site . . . after work hours . . . greatly reduces downtime costs and saves you important time and money. Regardless of what your particular job requirements are, Southern Tire can supply the size and tread design best suited to your needs. Whether you operate light or heavy equipment, you can get new tire mileage at approximately half the cost, when you call on Southern Tire for your retreading needs.

Modern 3-Sectional Molds. No buffing Rock Service, Traction Types or Rib to breaker strips regardless of growth. Treads, and all sizes available.

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# Does your pusher have enough speed plus power to load your big scrapers fast?

If you are using big scrapers, you need a big pusher — one with the speed and power to minimize loading delays. You need a pusher that can position quickly, and push fast — with plenty of power at speeds that closely match the high forward speeds of your rubber-tired scrapers. You also need a pusher with the acceleration and power to boost your loaded scrapers out of the cut at high speed, to get them right into hauling gear for faster cycles.

To meet these requirements, LeTourneau-Westinghouse offers the giant, 436 hp "Twin-C" — the world's largest rubber-tired pusher. Here are some of its advantages:

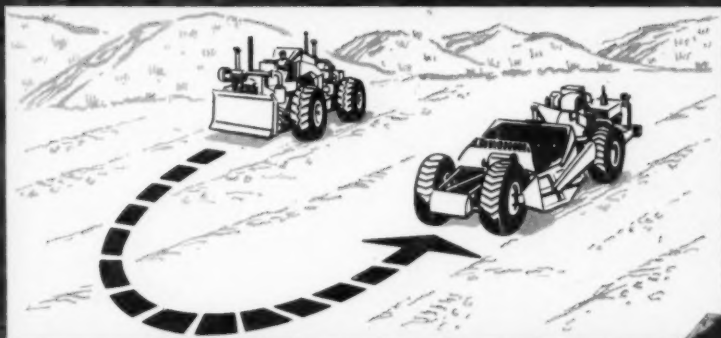
**Extra power:** tandem engines are synchronized thru twin transmissions and torque converters, to give pusher 436 hp, and 64,500 lb drawbar pull.

**Speed:** the Twin-C travels up to 20 mph forward, 5.8 in reverse.

**Single unit pushing:** there is no need to double-head tandem pushers when loading largest scrapers. "Twin-C" heaps 'em all, fast. You save time positioning and pushing, too... save the added cost of operating an extra machine with its extra operator.

For faster, more economical push-loading, investigate this powerful 436 hp Twin-C pusher. Phone or write for literature, facts and figures.

\*Trademark TW-1747-DC-1



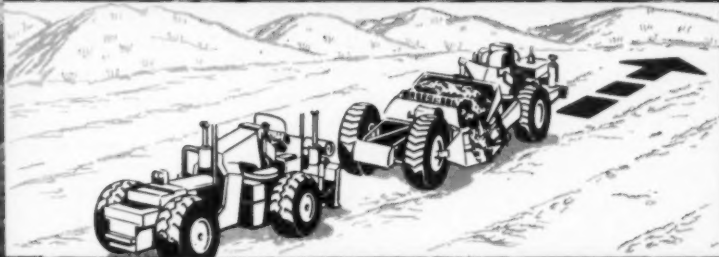
## 1 Positions quickly

With speeds to 20 mph and wagon-type electric power-steer, operator can quickly maneuver Twin-C into position for on-the-run pushing.



## 2 Pushes fast

With 436 hp, twin-engine power driving 4 big, wide-base tires, speedy twin-torque pusher tops out heaped loads fast.



## 3 Boosts scrapers out of cut

Twin-C's quick acceleration and power boosts scraper out of cut at high speed, lets scraper operator shift directly into higher haul gear.



**LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS**

*A Subsidiary of Westinghouse Air Brake Company*

**Where quality is a habit.**

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Non-treated open surface before spring maintenance.  
Note loose aggregate.



Another view of the same roadway after consolidation  
with Columbia Calcium Chloride.

## HOW TO GET BETTER ROADS THIS SPRING AT LESS COST... WITH COLUMBIA CALCIUM CHLORIDE

Right now is the time to put your spring road maintenance and stabilization program into effect.

1. Check soil-aggregate roads for proper balance of aggregate and binder. Add where necessary.
2. Reshape to proper crown while sufficient moisture is still in the ground.
3. Treat with Columbia Calcium Chloride.

Economical Columbia Calcium Chloride holds soil moisture in your roads, makes firm, compact, smooth surfaces. Roads are less apt to wash out, dry out, or develop potholes.

Maintenance costs are lower with Columbia Calcium Chloride treated surfaces. Annual gravel loss due to

abrasive action of traffic is cut up to 75%. Only three or four bladings per year are usually needed—even on heavily traveled roads. Just one or two "sweetening" applications of Columbia Calcium Chloride are necessary to maintain firm, smooth, dustless wearing surfaces through summer and early fall.

We will be happy to send you the latest information on new economies in road treatment. Contact your closest Columbia Calcium Chloride supplier or write directly to the nearest Columbia-Southern District Office or to our Pittsburgh address.

High Test Flake (94-97%  $\text{CaCl}_2$ ) is available as a companion product to Regular Flake (77-80%  $\text{CaCl}_2$ ). Each 80-lb. bag of High Test does the job of a 100-lb. bag of Regular.

### COLUMBIA-SOUTHERN CHEMICAL CORPORATION

A Subsidiary of Pittsburgh Plate Glass Company • One Gateway Center, Pittsburgh 22, Pennsylvania

DISTRICT OFFICES: Cincinnati • Charlotte • Chicago • Cleveland • Boston • New York • St. Louis • Minneapolis • New Orleans  
Dallas • Houston • Pittsburgh • Philadelphia • San Francisco IN CANADA: Standard Chemical Limited

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Minnesota state highway department and William G. Elliot III of the Bureau of Public Roads, Washington, D. C. Mr. Darrell was chairman of the Subcommittee on Signs, National Joint Committee on Uniform Traffic Control Devices. Mr. Elliot was the secretary of the subcommittee.

This proposed Manual was adopted, in April of 1956, by the state highway board of Georgia as a supplement to their Manual on Uniform Traffic Control Devices. It is not known how many other states have adopted this Manual, but, for those not having such regulations, this work is worth looking into.

The Manual includes chapters or data on general specifications, road construction signs, warning signals, regulatory signs, sign erection, barricades, location of construction traffic control devices, lane striping, lighting reflectorization, delineators, one-way traffic, urban work, and maintenance operations.

For a copy of the manual, address the National Safety Council, 425 N. Michigan Ave., Chicago, Ill.

### Dietz Supports Research in Warning Devices

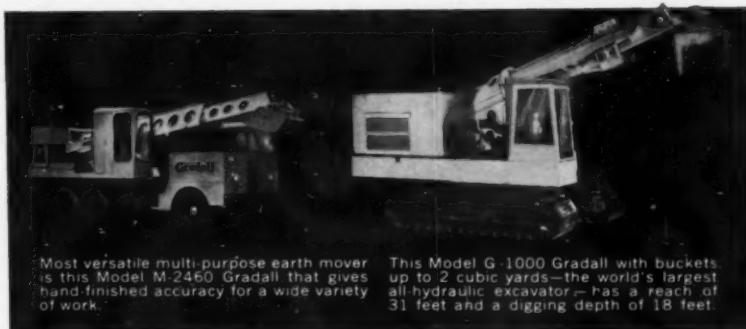
A manufacturer has shown broad gauge thinking in research in better highway traffic protective devices. The firm is R. E. Dietz Company of Syracuse, New York, which announces a grant to the University of California at Berkeley. The purpose is to support a one-year study entitled "Portable Roadway Hazard Warning Devices." The grant will supplement continuous studies of the Dietz research staff in their own laboratories and on actual job locations.

### County Management Relations

"County road management relations" is the title of a guide adopted at the recent annual conference of the National Association of County Officials, held in Portland, Oregon. Constituting a report of a special joint committee of county commissioners and engineers, this guide has been printed as the first of a series of guide booklets. It describes the relations between county board and engineer in carrying out Road Management duties.

A copy is available on request to National Association of County Engineers, 1721 De Salle's Street, Washington 6, D. C.

## NOW A COMPLETE LINE OF HYDRAULIC EXCAVATORS



Most versatile multi-purpose earth mover is this Model M-2460 Gradall that gives hand-finished accuracy for a wide variety of work.

This Model G-1000 Gradall with buckets up to 2 cubic yards—the world's largest all-hydraulic excavator—has a reach of 31 feet and a digging depth of 18 feet.

## NEW GRADALLS...



Model 200 Hopto provides a 1/2-yard bucket under complete hydraulic control, a 200-degree swing and a 14-foot digging depth. This is available on the truck-mount shown, also on wagon and crawler mounts.

Outperforming larger, mechanical-type equipment is easy for this Model 500 TM heavy-duty 1/2-yard Hopto Backhoe. It provides a 20-foot digging depth and 360-degree swing.

## NEW HOPTOS...

All Gradalls® and Hoptos® feature full hydraulic power with positive hydraulic control—to combine more movements with fewer controls than any other machines. This insures a more efficient working cycle to speed job completion.

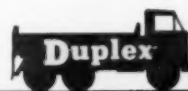
Check with your Warner & Swasey Distributor and get the complete story on how these versatile earth movers can help increase your profit picture.

©Reg. U.S. Pat. Off.

### WARNER & SWASEY

CONSTRUCTION EQUIPMENT DIVISION

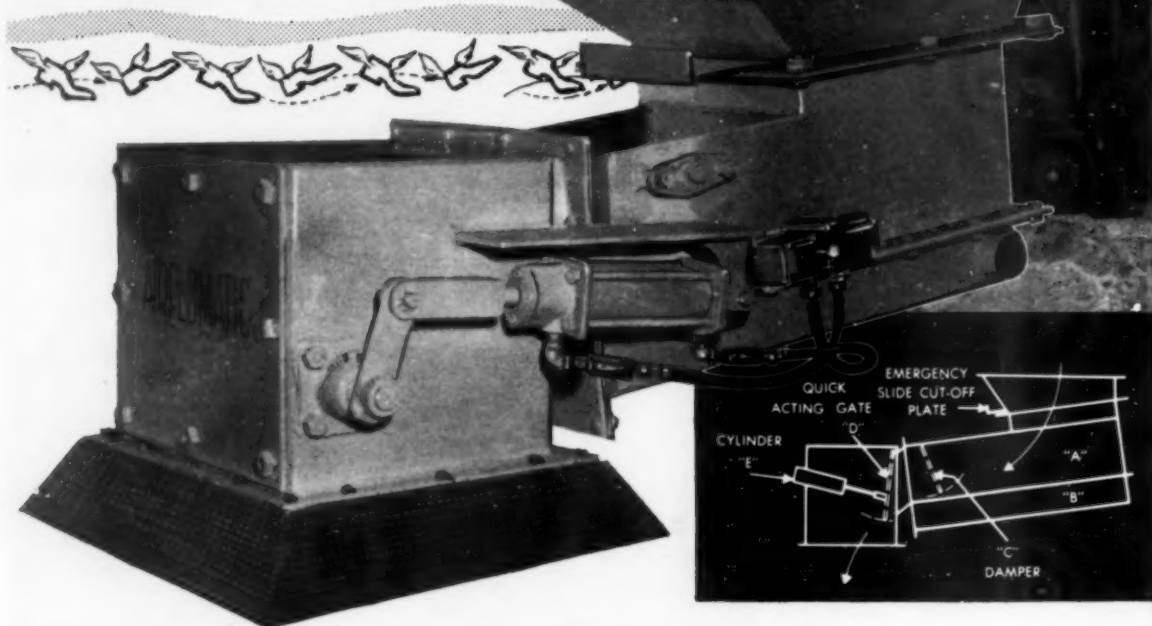
Cleveland 3, Ohio



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FEEDING CEMENT?...

let your cement  
walk on air!



## The BUTLER Airflomatic Cement Feeder

With the BUTLER AIRFLOMATIC your cement is conveyed on a trouble-free cushion of air. No moving parts to break. Nothing to cause down-time because of feeder trouble.

And you have high precision feeding—always.

Best of all, the BUTLER AIRFLOMATIC can easily be installed in any plant regardless of make wherever a vane feeder or screw feeder has been used.

A blower attached to the batcher platform provides a cushion of large volume, low pressure air

which also aerates and fluffs the cement in the overhead bin... and does it much more effectively than a costly compressor. Often no jets for additional air are needed.

So no matter who manufactured the plant you have, call in the BUTLER Distributor\* for a complete description of the Airflomatic Feeder or send the coupon directly to BUTLER BIN. You'll get prompt action.

### BUTLER BIN COMPANY

959 Blackstone Avenue, Waukesha, Wisconsin

\*One BUTLER Distributor put an Airflomatic in his pick-up truck, called at 20 Concrete Plants and Roadbuilders set-ups. All 20 bought Airflomatics. You'll want it, too.

#### BUTLER BIN COMPANY, Waukesha, Wisconsin

Please send me complete description and costs of the BUTLER AIRFLOMATIC CEMENT FEEDER

- ☐ We have a Ready-Mixed Plant which was manufactured by.....  
☐ Highway Batching Plant which was manufactured by.....  
☐ Concrete Block Plant which was manufactured by.....

NAME .....  
COMPANY .....  
STREET .....  
CITY ..... STATE .....

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# That's my pop!

... and I'll never forget the first time he took me along on a job. Pop kept digging that ditch so fast that I had a hard time following along to watch him work. At the end of the day he put his hand on my shoulder and said, "Son, that's the way you keep a fleet of dump trucks on the go."

*Someday that youngster will find out for himself that Pop knew what he was talking about. He will find, too, that Bucyrus-Erie will be there first with the newest ideas and the sound engineering to do the job better.*



**BUCYRUS  
ERIE**



...a 'plus' with every pass



## DOES YOUR JOB REQUIRE A 26 YARD UNIT?



CURTISS-WRIGHT MODEL

# 226

**CW-226 SELF-PROPELLED SCRAPER**

Capacities: 26 cu. yds. struck, 36 cu.  
yds. heaped, 78,000 pound rated load

**SALES • SERVICE • PARTS**  
at your  
**CURTISS-WRIGHT DISTRIBUTOR**

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Have you a big-yardage project coming up? . . . If you do, your job needs the self-propelled, 26 yd. struck, 36 yd. heaped CW-226 — the high production unit that carries more yards per load, more loads per hour . . . The CW-226 is a high production unit designed to handle large yardage projects, and give a bonus with every pass . . . Throughout the entire line of Curtiss-Wright 'plus-yardage' scrapers, unit construction, Roto-Gear steer, constant live winch and positive roll-out ejection make the difference . . . Make the difference pay off. These features make Curtiss-Wright the leader in the construction field today.

SOUTH BEND DIV. CURTISS-WRIGHT CORPORATION, SOUTH BEND, INDIANA

**SOUTH BEND DIVISION**  
**CURTISS-WRIGHT**   
CORPORATION  
**SOUTH BEND, INDIANA**

**ROADS AND STREETS, March, 1959**

### Job Management

# Busy Season for Special Batch Truck Fleet

*Contractor's highly maneuverable trucks, factory-tailored to owner's specifications, batch hauled for a million square yards of Tollway paving during the 1958 season—plus a late-season run for O'Hare Airport near Chicago.*

**By James R. Cummings**

Assistant Editor of Roads and Streets

**G**IVEN three dual-drum pavers and a matching batch plant, the speed and maneuverability of the batch trucks is the key to keeping the job humming.

With this in mind, and with 1,050,000 sq. yd. of concrete paving work in sight for the Illinois Tollway, Pierson Contracting Company of Saginaw, Michigan, began crystallizing their ideas for the ideal batch truck.

Armed with stop-watch data and other observations made over a period of years, Pierson's staff

collaborated with a manufacturer. The result is a string of trucks which incorporate features that have paid off during the summer just past.

The new trucks will be described in some detail, but first a word about the Pierson firm and its role on the Illinois Tollway.

Pierson Contracting Company works mainly in the field of grading and concrete paving on state highway projects and toll roads. In 1956, Pierson and Louis Garavaglia formed a joint venture for work on the Indiana Toll Road. In 1957, CKG

#### **Fast Action at The Skip**

A large pump and piston for greater hoist speed cut in-and-out time at the pavers. Full batch load raised in five seconds.





● Maneuverability of the trucks plus Pierson's insistence on well maintained haul roads aided rapid batch truck movement at the paving site.

Associates, a joint venture, won five sections of the Northern Illinois Toll Highway (combined bid prices, \$32,085,291). These firms were Contracting & Material Co., Kenny Construction Co., and Louis Garavaglia.

Pierson in association with Garavaglia has handled the paving on four of these sections, the fifth being a bridge construction job.

In 1956, the Pierson company began a serious search for better batch trucks in the paving operation, when both single axle and tandem trucks failed to satisfy on Indiana Toll Road work. The reason assigned for this by the company officials

were (1) too long a wheelbase for acceptable maneuverability; (2) a hoist too slow for high-production batching operations; (3) inadequate power-weight ratio for fast acceleration and for getting through sand and mud.

This wasn't merely rash and unfounded criticism. John and Bill Pierson, company owners, and Dave Stein, superintendent, had fixed the success—or lack of same—of a batch truck in their operations on three factors—speed of handling (including dumping and maneuverability), distribution of weight (to meet load restrictions), and mechanical dependability.

Over a period of weeks, the checkout man at the batch plant marked on the sheet the departure and return time of each truck. It was determined that, with 3-batch units, six trucks will normally supply a dual-drum paver up to one mile away (one-way distance); after the first mile, the average need was two more trucks for every added mile of haul.

Concerning weight, it was found that, in most single-axle trucks, too much truck weight was concentrated on the rear axle. Such trucks, when forced to use a state road on the haul route, couldn't take three full-sized batches and stay within the weight limitations.

### How Pierson Staff Assigned Its 3-Compartment Trucks

Haul miles* (1-way) from batch plant	No. of trucks to supply one paver	No. of trucks to supply two pavers
1	6	12
1.5	7	14
2	8	16
2.5	9	18
3	10	20
3.5	11	22
4	12	24

\* Assuming average haul road conditions.

● The cement boxes are bolted to special 6-in. side channels, forming a unit for quick removal.





- Scenes on this page are at Pierson's fourth Illinois toll road set-up. Here, a truck is being serviced at a lube van—note hose reels in door in the side of the van.



### In and Around

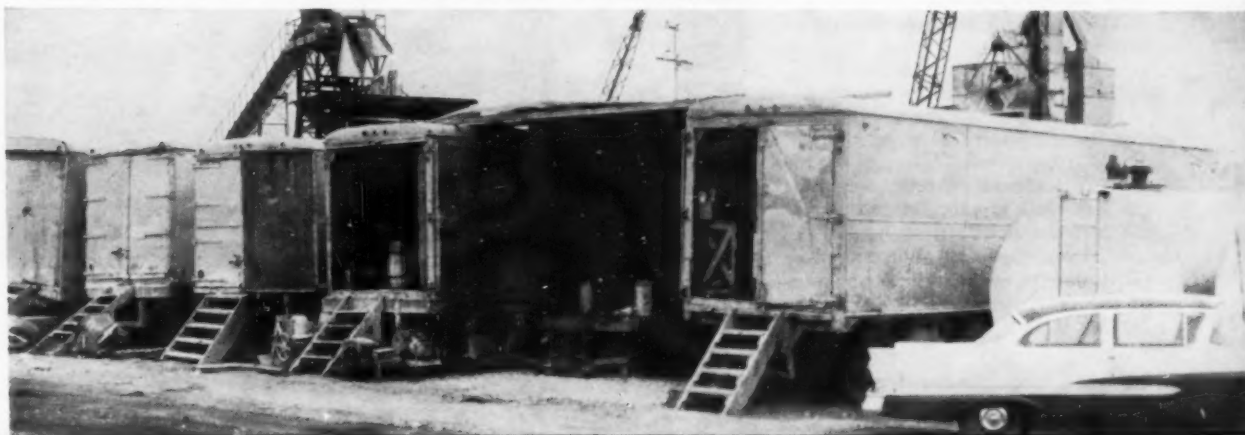
## Pierson's Maintenance Center



- A Reo truck on a concrete parking slab before a Fruehauf lube trailer.



- DA lubricants were dispensed from four drums at the rear of one van, left above, while grease lines and reels provided service from the side. A roofed-over area between two vans accepted major mechanical repairs, below. Trailers at far left were for maintenance of other equipment.





● At another Pierson job on the Tollway, the Reo batch trucks go through the line for their loads.

## BATCH TRUCKS

It was decided that single axle, three-batch trucks would be purchased to obtain maximum speed both in trips per hour per truck and in batches per hour per paver. The units also must scale "legal" and still have adequate power and strength.

This decision involved a calculated risk because it meant buying two batch plants with triple batchers, which would be ill-suited to four-batch tandems if the three-batch trucks did not work out.

Garavaglia and Pierson ordered 11 Reo Model F22R trucks in May, 1957. The Pierson officials sat down with Reo representatives and designed the truck from available choices of frames, cabs, engines and optional equipment.

The result of this factory-contractor collaboration was a finished product containing, in Pierson's opinion, three major advantages:

- The single-axle design provided quicker handling and more maneuverability.
- With the front axle set back, and the cab thus further forward on a 150-in. wheelbase, there was more weight on the front axle and proportionately more payload possible at the rear, thus permitting three batches with a legal axle load.

hauling in five or ten minutes simply by lifting off the whole cement batching unit with a crane or boom truck.

Also, the trucks have Reo's 6-cylinder Gold Comet engine (130 hp at 3,200 rpm) and a 5-speed direct-shaft Clark transmission. All tires are 10.00 x 20 Goodrich; on the rear, nylon traction Express tread models ordered direct from the factory, and nylons with conventional tread on the front.

CKG Associates purchased 11 more Reo's during the 1957 season for work in the Pierson-directed fleet. It was decided, toward the end of the year, that the fleet would have to be increased and improved still more in anticipation of the big summer paving season in prospect. So the Pierson people met once again with Reo.

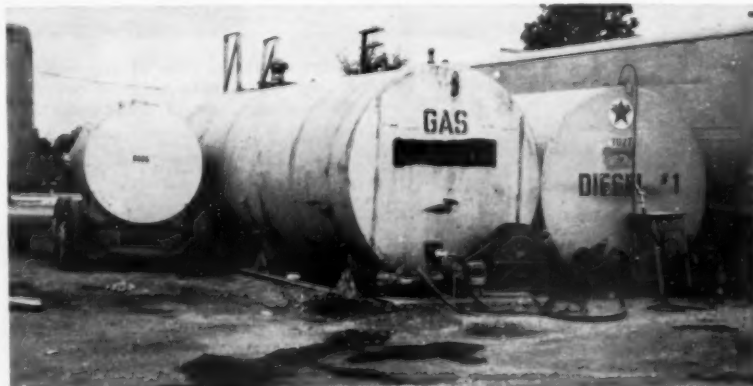
Detailed observation of the trucks' performance had been maintained in an effort to refine the design still further. Thus the Pierson field notes, together with reports submitted by Reo field men, supplied ample material for evaluation and for suggestions on the new models.

Nine more trucks were delivered in April, 1958—making 31 in all. Following are some of the more important changes incorporated in the later purchase:

- A new Heil body made of high tensile steel, providing a stronger frame at no increase in weight.
- An 18,000-lb. Eaton Axle.
- A new 11,000-lb. capacity "variate" rear spring, compared to the former 9,500 lb. The former spring also had an "overload"; thus the new truck had greater capacity in the spring with less weight than before.
- Gear change in the high-low

- A larger pump and piston on the Heil hoist provided more speed. The truck body with full batch load will raise in five seconds, lower in four.

Cooperation between Reo, the Heil Co. and Pierson personnel resulted in the following special body: On a Heil body measuring 10 x 6½ ft. with 30-in. sides was added a 6-in. channel or rail on each side for additional height. Three Heltzel cement boxes and boards were bolted to these side channels to form a unit. This way, the truck could be converted to dirt



● Two 8,000-gal. tanks for Texaco gasoline and diesel fuel, each tank with Leland Motor and Marlow fuel pump. The 1,000-gal. wheel mounted tank at left is for water.

## Some of Pierson's Steps in Subgrade Preparation



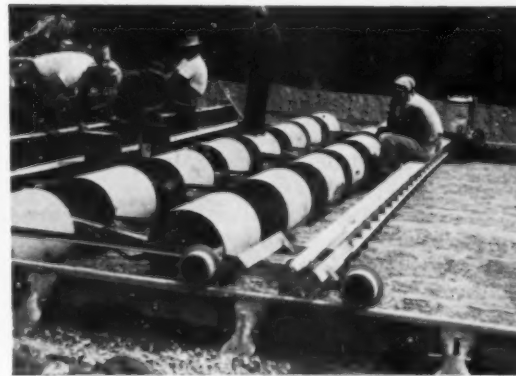
● A LeT-Wesco "D" Tournapull and Lima Roadpacker bringing in and compacting additional base material.



● Austin-Western motor grader's blade rode the form to bring base to desired level.



● The Roadpacker performed compacting of base in midst of form pin driving.



● A finegrader pulls garden rollers in tandem to achieve a final form-to-form dressing of the base.

speed ranges of the first 22 trucks was made by vacuum; in the new trucks this is operated electrically.

- Alloy steel frames for greater strength at no increase in weight.
- A single latch for the tailgate as compared with the standard two latches previously.

The weight of these latest trucks is 10,700 lb. fully equipped. Cost: reportedly between \$7,000 and \$8,000 each, fully equipped.

- **Truck Maintenance.** Understandably, Pierson gave tender care to this fleet into which so much thought and planning had gone. Two men were assigned to greasing. Springs were greased every night, and the trucks got a thorough over-all greasing three times per work week, with oil changes once a week.

There were two mechanics, plus welders available for emergency. Parts were carried in one trailer van, DA oil and grease, Alemite dispensing apparatus and a Champion compressor in another. A Hobart welder on a pick-up was kept ready for on-the-spot repairs. The trucks were gassed every night at a Texaco-supplied 8,000-gal. tank located alongside the greasing dock.

Although many of the drivers for the toll road work this past summer were hired locally, some were brought from the company headquarters in Michigan. Though responsible drivers were available locally, many hadn't driven a batch haul before. The company decided that the best teaching method was to place the newcomer in the cab beside an experienced driver for a

day. He could observe the technique required to achieve a rapid cycle, particularly at the paver skip, and then take the wheel under guidance.

The Pierson company during the 1958 summer had ideal opportunities to see its "personalized" trucks in action as a unified fleet. Work on the four CKG roadway contracts was so planned that all of the trucks were assigned to one section at the same time; each job's batching was cleaned up, before moving to the next. An extra batch plant set-up made it possible to move between jobs in one day.

The first of these Reos worked on Michigan jobs in the 1957 summer. All 31 trucks participated in the Tollway run during 1958. The  
(Continued on page 72)

# Have All These New Congressmen

**Harold J. McKeever: Editor in Chief of Roads and Streets**

**T**HE Interstate highway program is up for important new financing in Washington. Congress has the job of doing something about the present Highway Trust Fund limitations; of voting new financing that will assure completion of the Interstate system on schedule along with balanced effort on the ABC roads.

The committee leaders in Washington who are wrestling with this problem aren't smiling quite as happily as they'd like. This year is seeing a terrific competition for Uncle Sam's dollars. President Eisenhower's hope for a balanced budget means that somebody's pet scheme—housing, schools, urban renewal, airports, or what—will get bumped. Even without administration pressure for economy, no congressman would want to see the federal government underwrite everything asked of it.

● This is the time to dust off our most up-to-date information in behalf of the *necessity* for the highway program. Yet our industry's winter conventions, except for the ARBA at Dallas, were singularly lacking in such "selling." True, at the AASHO convention in San Francisco, and gatherings elsewhere, the top subject was federal road financing. The Senators and House leaders who spoke around the country were all for voting more funds; they differed chiefly in their ideology of how and where to raise the money.

What these leaders need is fresh evidence from back home—mail from constituents—that people across the nation want the highway job pushed ahead on schedule.

What Congress should have, too, is a fresh documentation of the economic and social and defense importance of the roads now blueprinted. A business that depended on last year's sales campaign to sell goods would go out of business in a

hurry. Yet we are presently expecting Congressmen to recall, from hearings long past, that there was a good and urgent reason to pass the 1956 and 1958 federal highway acts voting such a large-scale start.

Besides, many of the Congressmen and Senators are newly elected and don't have the full background. This goes also for the public works and roads committeemen of both houses.

Eighty-two members of the house are *new* this session, as are 16 new Senators. These 98 men—a substantial block—have never heard testimony on the highway program, have not had any benefit of experience in federal highway matters, and are possibly not fully aware of the *national* aspects which swung the program through Congress. In addition, although only one of the 18 members of the House Subcommittee on Roads is new, the Senate Subcommittee on Roads has a new chairman and 8 out of 11 members are new.

It's pretty late now to build a fresh ground swell of public awareness and enthusiasm for highway advancement, as far as this year's congressional action is concerned. But all groups and individuals could give thought now to a permanent sustaining campaign of public information.

● We counsel all who read **ROAD AND STREETS** to help with any effort that will keep the basic *need* story before the public: the full facts on the efficiency, safety and other benefits of better highways.

We've begun only in the last five years to get even slightly ahead of the auto and truck; to build only a little faster than the speed of obsolescence and wear. Most people in most regions still know of the Interstate system only as an exciting and imaginative idea on paper. The long stretches of completed freeways are still in the industry pipeline of advance engineering and construction.



## Been Given the Highway Need Story?

Most of the costly new city routes planned still do not carry traffic.

The prime source of "selling" information has been the state-wide needs studies. The Automotive Safety Foundation in the past has helped with pilot or demonstration studies in 23 states, and now all states are required to survey the road needs periodically, as a basis for fixing federal fund allocations. This use of planning data has been invaluable. The sad thing however is that the documentation of need, thus arrived at so painstakingly, is often lost in the files. In most states the facts haven't been used effectively in public relations, either by the highway department or good roads groups.

One part of the problem today is that it is harder to show the individual where he comes in. The pitch isn't just a better road past his farm, or a faster road between factory and home. The benefits are more long range.

- The long-range planning principle for highways indeed has taken root so rapidly that industries, businesses, and whole communities are being revamped with the assurance that the highways will crystallize according to the 13-year plan or a sound modification of that plan. The Interstate system of freeways, as envisioned to link all principal cities, states and regions, is so vital to economic growth that to delay it seems a grave act of public disservice.

Continued development of all road systems in balance likewise will contribute to lowered transportation costs, quickened business growth, more efficient farming, progressive reduction in the traffic fatality rate. Our highways have system aspects that justify strong and continued federal financing and coordination. National defense is not the least of these.

So, Mr. Congressman, please recall the flood of compelling data, brought out in the many past

hearings, that led you (or your predecessor) to initiate the Interstate program. This program now needs your attention to assure its continuance at the level of buildup planned, and, at the quickened pace for which a great industry has geared.



### A PROGRAM TO WATCH

When a group of contractors decides to help seek better construction answers for its industry segment, it's major news.

That indeed is just what the three-year-old National Bituminous Concrete Association has done. As detailed elsewhere in this issue, this association representing over 500 contractors has launched a 10-point quality improvement program, as its contribution toward a strong and growing participation of bituminous construction in the highway program.

Were this merely a lot of publicity fanfare, we would quickly discount the effort. The NBCA program, however, really means business. It has been approached painstakingly, aided by good technical advisers. Its leaders are now calling in equipment makers, material producers and others for their viewpoint and cooperation. A technical coordinator with outstanding qualifications has been announced. Funds are rolling in for the job.

The hot-mix contractors have a unique opportunity here to help their practice advance. It is hoped that the program will remain unbiased, and that all who are asked to lend a hand will be willing to do so, even if some differences must be ironed out, and some sacred cows get slaughtered.

The highway departments meanwhile don't have to wait for this new research to start yielding answers. They can start today, where it counts most, by cleaning up their specifications. Many states still have specs that are behind the times, or full of inconsistencies, ambiguity, and burdensome methods requirements which add to the cost of black top work. Here is some important fixin' that can be done right now.



● A trucks receiving three batches simultaneously from a Butler plant. Note double plant set-up, also floodlights.

## BATCH TRUCKS

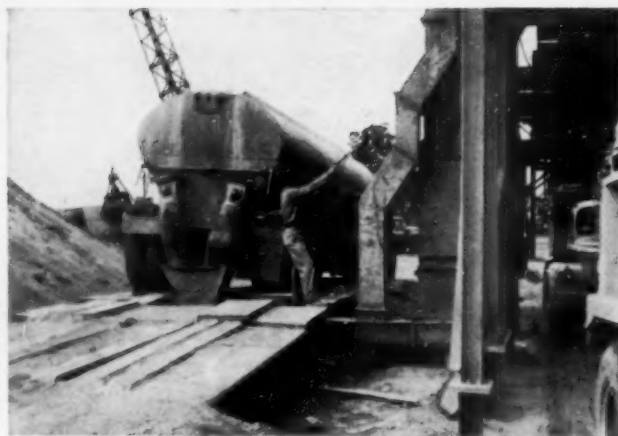
(Continued from page 69)

four Tollway jobs ranged from 200,000 to 350,000 sq. yd. each of concrete, largely 10" x 25' slab on the main line, with a considerable amount of ramp work at interchanges and cross-overs.

The three Koehring 34-E dual pavers (two on main line, one on ramps), made some fast runs, pouring up to 4,000 lin. ft. of 25-ft. slab equivalent. On other days, structure gaps or ramp work slowed the work. And rains were plentiful—in one three-week period, the pavers worked only four days.

Batches hauled in one typically "good" 6-day week totaled 13,692. The number of trucks worked at any one time averaged 10 for the ramp train and 18 for the 2-paver main line train. A truck was always kept on hand as a standby. The foreman checked the work each morning and afternoon, noting the haul distance and the number of trucks, to keep the work balanced.

Attention to detail in the design of the trucks brought benefits both large and small. Pierson officials cite the especially good oil record. The first 11 trucks had traveled about 40,000 miles each (to August 1) and their oil consumption was reported as "about the same as when delivered."



● Bulk cement being delivered by truck tanker through canvas chutes to screw at Pierson's fourth plant set-up.

An old nemesis of batch trucks in hot weather has been vanished; the cylinder heads have water cooled intake manifolds, which have done away with vapor lock, also eliminated burned valves.

While considering these and the other advantages cited, some say, "how can you make money with a 3-batch single axle unit compared to a 4-batch tandem?" The Pierson company replies: "Due to the maneuverability of these trucks and their speed of action at the skip, we get higher production from our pavers. Furthermore, any one truck can make more trips per hour than a 6-wheeler and thus can carry just as many batches daily. And, we have a smaller truck which costs probably half as much as a tandem. Also, refinements we have added with the help and cooperation of the manufacturers involved have given us a mechanically dependable unit."

## Scrapers Adjusted for Self Loading on Grades

An example of how a scraper owner can get extra yardage when given expert council by his distributor, was observed recently on a California job.

The contractor for grading a housing site on a steep hillside, Rose and Metoza, of Castro Valley, California, planned to move extensive yardage from the hillside with three Caterpillar DW10 tractors and No. 70 scrapers. Since this contractor handles such jobs from location to location in this suburban area, the local distributor figured that he would gain by having a machine that could work when necessary without push loading, and still handle an efficient yardage per hour.

The solution was to equip the tractors, with extra wide rims and drive tires for extra traction and to weight the tractors with a steel slab to secure further traction on drive tires. Also the tires were filled with water.

With these modifications, the scrapers were able to self-load efficiently in gravel and clay with the help of down grades running 15% to 20%. This made it unnecessary to import a push dozer for the work; or at other times, freed the dozer for other useful work on the site.

The distributor was Peterson Tractor and Equipment Company of San Leandro, California.

F. CARLISLE COATES, Construction Engineer, Vermont Department of Highways, died recently. He had been with the department since 1926, rising through various posts to his recent executive capacity, and had been a leader in organizing the Vermont State Employees Association.



**PROJECT PAYDIRT** *pays off for you again*

# **BIG NEW CAT No. 14 TURBOCHARGED MOTOR GRADER**

Most versatile big grader ever developed, recommended for everything from the roughest jobs to the finest grading!



**PROJECT PAYDIRT!** Caterpillar's multi-million-dollar research program—to meet the continuing challenge of the greatest construction era in history with the highest production earthmoving machines ever developed.



**MAINTAINING HAUL ROADS**, the No. 14 pays off with high capacity and high availability on the toughest construction jobs. It has the power to handle heavy material at speeds that won't interfere with hauling units!



**DITCHING AND SPREADING**, the No. 14 pays off with high production in this most demanding work. When working in fill areas, you can also use it to advantage spreading subbase and fill!

## ***BIG, VERSATILE No. 14 PAYS OFF WITH***

In the new No. 14 Series B, Caterpillar brings you the most versatile motor grader ever developed in the "big machine" field. It is the one big grader that delivers high capacity both on the roughest and finest grading work. Another major achievement in Caterpillar's "Project Paydirt," it answers the contractor's need for a unit that comes through dependably with higher, faster, lower-cost production on today's big jobs.

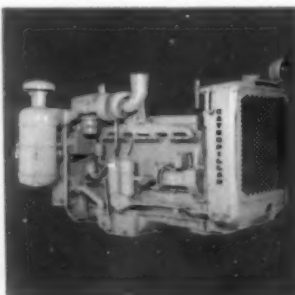
The first and only Turbocharged Motor Grader, the No. 14 packs 150 HP (rated at sea level). Weighs in the 30,000 lb. class. Operates at the highest practical

working speeds with either a 12-ft. or 14-ft. moldboard. Has a turning radius of 36 ft. And with all this power and heft, it has the extra strength to deliver the high availability for which Cat Motor Graders are famous.

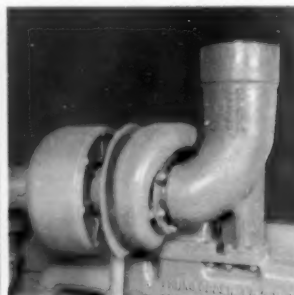
In the new No. 14 you'll find the latest engineering advances developed by Caterpillar research. Example: new design permits increased clearance between moldboard and circle for greater loads. You'll also find exclusive time-tested Caterpillar developments. Example: the oil clutch. All of these many features, some of which are listed here, pay off in this one fact:



**NEW DRY TYPE AIR CLEANER.** Most efficient air cleaner ever developed. Removes 99.8% of all dirt from intake air during every service hour. Can be serviced in five minutes. Cuts maintenance time (by as much as 70%) and costs. Extends engine life.



**TURBOCHARGED CAT ENGINE.** First and only Turbocharged engine ever offered in a motor grader. Of job-proven design, it is ruggedly built for a long life under severe working conditions. Like all Caterpillar Engines, its high torque rise (18%) pays off on the job.



**NEW TURBOCHARGER.** Close-up of the Cat Turbocharger, which greatly increases over-all engine performance. Turbocharger utilizes waste energy from engine exhaust to step up efficiency and economy. Fuel system permits use of economy-type fuels without fouling.

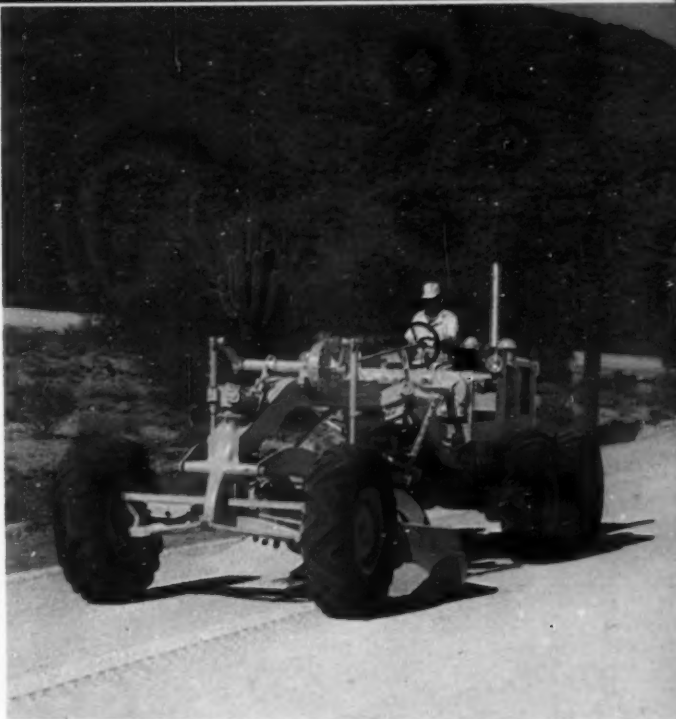


**IMPROVED MECHANICAL BLADE CONTROLS.** Standard on the No. 14. Improved design increases speed of response 25%. Controls provide precise blade adjustment, reduce kickback, ease engagement. "Anti-creep" lock makes blade stay put under load.





**BANK SLOPING**, the No. 14's low center of gravity and broad 8-ft. base pay off in superior blading and machine stability. An operator can work with confidence on steep slopes—and maintain high production on them!



**FINISHING**, the No. 14 pays off with maximum efficiency on fine or rough work. With the new transistorized Preco Automatic Blade Control, it controls blade slope within  $\frac{1}{8}$  in. in 10 ft.—cuts fine grading time as much as 50%.

## HIGH CAPACITY ON EVERY GRADING JOB

You can use the No. 14 profitably on many different applications such as:

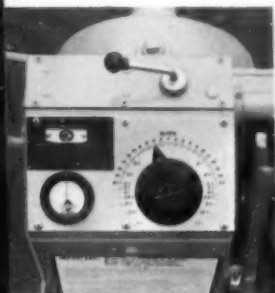
- power applications like heavy grading, heavy ditching, rough grading and bank sloping.
- control applications like light spreading, surface maintenance, fine grading and light blading.

As a result, you don't have to pick "spots" to make the No. 14 pay off for you. This all-purpose grader will earn its keep on every application with high capacity and low operating cost. But see for yourself. Get the complete facts on the big new No. 14 from your

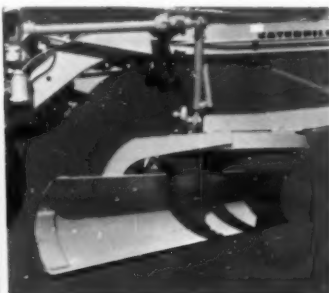
Caterpillar Dealer. Go over it on his lot—watch it work on your job. Say when and where—he'll demonstrate!

### NEW TURBOCHARGED No. 14

Engine HP	(rated at sea level)	150
Weight		29,280 lb.
Blade	Standard	12 ft.
	Optional	14 ft.
Tires (w/10-in. rims)		
	All around	14.00-24 (10 ply rating)
Travel speeds:	6 forward, 2 reverse	2.6 to 21.6 MPH



**PRECO AUTOMATIC BLADE CONTROL.** Optional on the No. 14. Another exclusive! Operator selects desired slope in dial. Now transistorized for freedom from maintenance and adjustment, the unit automatically maintains blade slope within  $\frac{1}{8}$  in. in 10 ft.



**AMPLE THROAT CLEARANCE.** New design permits increased clearance between moldboard and circle for greater loads. Extra strength is built into frame, drawbar and circle to match engine power, absorb punishment of rough work and assure accurate blading in tough going.

**14.00-24 TUBELESS TIRES.** All way around—all tires mounted on 10-in.-wide rims to stiffen tire side-walls and reduce tire "roll." Large tires on front end improve machine stability.

**POWER STEERING AND POWER BRAKES.** Both provide the fast, positive response that gives an operator complete confidence to tackle tough jobs. Ease of operation helps him maintain high production anywhere.

**UNEQUALLED VISIBILITY.** Dash-mounted lift gears and low frame design provide clear visibility. An operator, while seated, has an unobstructed view of critical areas at the front wheels, toe of the blade and circle. Convenient in-seat starting is another No. 14 plus.

**EXCLUSIVE OIL CLUTCH.** Most advanced clutch design in the industry. Provides up to 2,000 hours' service without adjustment, the equivalent of about 12 months of "adjustment free" operation. Virtually eliminates down time for clutch repair.



## How Project Paydirt pays off across the board for you in the only complete earthmoving line!



In the No. 14, you have just seen one of many achievements of Caterpillar's multi-million-dollar research program. This program is responsible not only for developing new machines like the No. 14, but also for improvements in every current model—Tractors, Scrapers, Traxcavators, Motor Graders and other earthmovers.

That's why, when you invest in a Caterpillar machine, you can count on it for unmatched performance in its class. It's a modern, heavy-duty unit that pays off where the chips are down—on the job. Here's the line-up at your Caterpillar Dealer to help you to more profitable earthmoving. Besides the No. 14, it includes the No. 12 and No. 112 Motor Graders and the following:



**FIVE TRACK-TYPE TRACTORS:** Spearheaded by the "take-charge" D9 (320 HP), there's the new D8 (225 HP), D7 (128 HP), D6 (93 HP) and D4 (63 HP). (All are flywheel ratings.) Plus a complete selection of 'dozers (including the No. 7G Bulldozer), rippers, tool bars and tool bar equipment.



**THREE TRAXCAVATORS:** These front-end loaders provide a range of capacities that meet every purpose—No. 977 (2¼ cu. yd. bucket); No. 955 (1½ cu. yd.) and No. 933 (1 cu. yd.). All can be equipped with the exclusive Side Dump Bucket, or other quick-change attachments—special buckets, teeth, bulldozers or forks.



**THREE WHEEL-TYPE TRACTORS:** The two-wheeled DW21 (345 HP, max.), the four-wheeled DW20 (345 HP, max.) and DW15 (200 HP, max.) team with matching LOWBOWL Scrapers for high production: the No. 470 (19.5 cu. yd. struck), No. 482 (24 cu. yd. struck), No. 456 (19.5 cu. yd. struck) and No. 428 (13 cu. yd. struck) respectively. Four Cat 4-wheel Scrapers are also available: Nos. 491 (27 cu. yd.), 463 (18 cu. yd.), 435 (13 cu. yd.), and 60 (7 cu. yd.), all struck capacity. And Athey Wagons couple with Cat wheel-type Tractors for rear or bottom dumping.

Your Caterpillar Dealer is headquarters for the most productive earthmoving equipment line in the field. He's a source of reliable information and service. See him today!

Caterpillar Tractor Co., Peoria, Illinois; San Francisco, California, U.S.A.

# CATERPILLAR

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

**Diesel Engines • Tractors • Motor Graders • Earthmoving Equipment**

**BORN OF RESEARCH  
PROVED IN THE FIELD**

# Colorado's End Result Specifications

## Verdict: "No Cause for Regrets"

*The policy of writing end results specifications for earth compaction and concrete pavement laying has won approval in this state. The policy is being tried out cautiously for other work, never however going to extremes which would hurt both the state and the contractor.*

**By W. J. Walsh**

Staff Construction Engineer,  
Colorado Department of Highways, Denver

**E**NGINEERS in the Colorado department of highways have for many years held to the belief that end-result specifications had considerable advantage over specifications that spelled out methods of construction to be employed by the contractor.

We believe that methods specifications stymie progress and destroy the initiative and ingenuity of the construction industry. Conspicuous in this respect was the specification for compaction as used by practically all of the state highway departments and other engineering agencies. These specifications described the type and weight of rollers and the depth of lifts at which material should be placed. Manufacturers of improved compaction equipment were greatly handicapped in trying to get their new machines in use due to restrictions imposed by Standard Specifications.

The greatest sales resistance they encountered from contractors was that, "your machine does not meet State Specifications." There was no incentive for the contractor to invest his earnings in improved methods when all that was necessary was for him to sit back and rent his old obsolete equipment on an hourly basis, and let the engineer worry about the results.

Let me point out that the engineer was also "hog tied" by such specifications and he could do nothing about it.

We have believed for a long time that this was wrong. Nearly a decade ago we proposed a change in specifications for compaction, requiring that the contractor be given a free hand in the choice of equipment and methods, and asking only for an in-place density at optimum moisture. At that time this met with considerable objection from the contractors, and they expressed a lack of confidence in the engineers' judgment and accuracy in the measurement of density and moisture. We dropped

the matter for a time but kept pressing on and did not let the subject die.

Another evolution is presently taking place. We now use, what we term, a modified cement treated base. For this type of construction our specification is designed around road mixing methods. Note that we said our specification is *designed* around road mix methods. It does not, however, preclude the use of other methods. The consequence is that some of our contractors are using central mixing plants for this type of work. We are presently revising our specification, in fact, bringing it up to date, so that it is more applicable to problems encountered in central mixing plants for this type of work. In doing this, the door will not be closed to the contractors desiring to continue with road mix methods.

Here again, we have the example of contractors and machinery manufacturers devising better methods and equipment when permitted to use their own resources and ingenuity.

In conclusion, we might say that an end result specification is a policy rather than an actual practice. There are situations under which it is neither desirable or practical to just simply spell out an end product. Such a practice, if carried to the extreme, could work a considerable hardship on our contractors. But, if we have the desire, this policy will work, and specification writing should always leave the door open for the very latest innovation in equipment and ideas.

We can say without too much fear of contradiction that our contractors favor this policy and for our own part we find that it works very well.

Soon, some of the more progressive contractors recognized the advantages to an end-result specification, and opposition diminished. A few even got behind the move.

On October 14, 1954, we awarded our first contract for embankment-in-place at a stipulated density and on a unit price per cu. yd. basis. The contract went to the Northwestern Engineering Company of Denver. The contractor was permitted to use any kind of compaction equipment which in his opinion would give the desired results at the least cost. This turned out to the satisfaction of everyone and has since become standard practice in Colorado. We doubt very much if many of our contractors would wish to go back to the old practice.

It is not apparent at this time if costs have been reduced, this consideration, while important, is

**Allis-Chalmers announces a new  
motor grader in the 80-hp class**

the  
**ONE FORTY FIVE**

- 80-hp Allis-Chalmers engine
- 21,540 lb

... Another outstanding motor grader joins the Allis-Chalmers line  
the **ONE FORTY FIVE**



**MODEL D**  
58-hp Allis-Chalmers engine  
8,800 to 11,450 lb



**ONE FORTY FIVE**  
80-hp Allis-Chalmers engine  
21,540 lb



**FORTY FIVE**  
120-hp Allis-Chalmers engine  
23,800 lb

move ahead with **ALLIS-CHALMERS.**



## BEST BUY IN THE MEDIUM-POWER FIELD

- Heavy-duty throughout at a money-saving price.
- Retains the widely-accepted characteristics and performance features of the 120-hp Allis-Chalmers FORTY FIVE grader.
- Designed and built for long, hard service on any construction or maintenance assignment.
- Offers the best combination of operator features of any grader near its size.



Operator advantages no other medium-priced grader can give you... "wide-open" visibility... over-the-circle lift cases... suspended pedals and exclusive no-kick, toggle-type controls.

**Power for high production.** Husky, high-torque Allis-Chalmers diesel engine handles overloads without shifting down... geared for good range of travel and working speeds.

**Load-handling ability second to none.** The new ONE FORTY FIVE has a 26 $\frac{1}{2}$ -inch-high arched

front axle—and highest throat clearance in its class. You get more dirt to the ROLL-AWAY moldboard and move it with efficient rolling action that uses less power.

See the new ONE FORTY FIVE motor grader at your Allis-Chalmers dealer's. Check its dollar-saving price. Then check its 80 hp and 21,540 lb on an actual demonstration. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wis.

ROLL-AWAY is an Allis-Chalmers trademark.



## .power for a growing world

... for more details circle 286 on enclosed return postal card

**ROADS AND STREETS, March, 1959**



Rough going? You bet! That's why Thiele Kaolin Company specified a torque converter drive in this Allis-Chalmers DH-16 Tractor.

## "Our HD-16 with torque converter drive keeps going on the roughest jobs!"

*says Owen Robinson, Mine Superintendent, Thiele Kaolin Company*

"We believe our torque converter equipped Allis-Chalmers HD-16 Tractor is the *best*," states Mr. Robinson. "Kaolin, the white clay used in making paper, can really bog down ordinary machines, but not so with the HD-16. Besides, we get 25 per cent more work out of a torque converter equipped machine compared to a conventional drive tractor operating under equal conditions."

Owners, superintendent and operators know that Mr. Robinson's words are very much to the point. Torque converter drives in crawler tractors speed work and save operating costs. Without equal in push-loading (by matching tractor speed to that of the scraper), torque converter equipped

tractors excel in other service as well by permitting the engine to operate in its most efficient speed range at all times. The torque converter matches power automatically to load demands . . . providing up to 6:1 torque multiplication (Twin Disc Three-Stage) when required. Heavy load pick-up is smooth and even without clutch slip-page . . . for better over-all flotation. And the operator can put in a good day's work and still feel like an evening out!

Allis-Chalmers offers a torque converter as optional on the HD-16 and as standard equipment on the bigger HD-21. And all three leading crawler tractor manufacturers, including Allis-Chalmers, standardize on Twin

Disc Torque Converter components for their torque converter equipped machines.

Be sure to specify a torque converter in your next machine. See for yourself how a torque converter cuts costs, brings in big profits.



**TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division) Rockford, Illinois**

. . . for more details circle 377 on enclosed return postal card

## COLORADO SPECIFICATIONS

not the primary objective. We believe that we have opened the door for the use of modern equipment and improved methods, allowing the construction industry freedom in the exercise of their initiative and ingenuity. We believe that this in itself will ultimately result in the best quality of work at the least cost.

While we in Colorado subscribe to the doctrine of end result specifications, it is not always possible to practice this one hundred percent. Specifications must of necessity be drawn around conventional methods of construction and standard equipment, but they should be flexible enough that new machinery and new ideas are not precluded from use. An example of specification writing is the control of depth when placing materials. Depth must be controlled within the limits of the capacity of modern machines to mix and compact. To place control beyond the limits of available machines or, conversely, to restrict the capacity, would be ridiculous in specification writing. If we agree with this reasoning, it is apparent that this feature could

remain in the hands of the contractor so long as quality and workmanship are not sacrificed.

● The construction of concrete pavements is an outstanding example of where all states specify in complete detail the equipment required for placing the pavement. Colorado is among those which do this, and until we have evolved a bit further in perfecting end result specifications, this seems to be desirable. However, let me point out that some four or five years ago, by special provision, we opened the door for admission of the slip-form paver. In doing this we retained all the other requirements for a high quality pavement. We have had no cause to regret this action.

Looking back over the years, we can remember when our specifications called for road-mix bituminous pavement. Every detail relative to equipment and methods was spelled out. This was desirable at the time, but the specification was flexible and contractors of their own volition gradually went to plant mix. This practice quickly evolved into the hot mix and today there are very few road mix jobs being built on our state highways.

## Hired Dump Trucks Governed by Order

In Missouri the rates which contractors must pay for hauling bulk materials, such as rock, sand, batch material, etc., in hired trucks must now conform to an order issued by the Public Service Commission.

All common carriers by motor vehicle must cancel existing rates, rules and regulations and establish and maintain the rates, rules and regulations described in the Commission's order. The rates apply to the transportation of bulk commodities in dump trucks. The ruling also sets forth the method used in determining the distance which the material is hauled; who shall load and unload the shipment; the minimum weight per load; a minimum rate; and the rates per ton or cubic yard.

Regulations are also prescribed for hauling over streets or roads which are in bad condition. The order also provides that in certain cases payment to the trucker may be on an hourly basis and sets out certain areas in the state in which the prescribed rates shall apply.

## Small Bumpometer for Testing Iowa Pavements

The materials department of the Iowa state highway commission has developed a new compact "bumpometer" for checking road roughness. The road roughness indicator



● Small bump checker developed for testing Iowa's road surface.

is patterned after a larger machine designed several years ago by the Bureau of Public Roads. The 75-lb., hand-operated device is the work of Lyell D. Henry, project chief in the materials department.

The indicator is pushed at a constant speed (3, 4 or 5 mph) by a walking operator. He reads the roughness registered by the center wheel on a meter located on the handle bar. Roughness encountered by the rear casters does not influence meter readings since the center of percussion is through the center wheel axle.

A simple, low cost, but extremely sensitive indicating circuit electrically transmits bumps to the meter. The circuit consists of a sensing element with a square wave generator, a transistor amplifier, followed

by a germanium diode clipper, a full-wave rectifier and finally an indicating meter. Road roughness values are instantaneously shown on the meter during operation. The bumpometer can be calibrated by simultaneous checking with a regular bumpometer, using standard tire pressure and electrical constants. It was built in the commission's machine shop at a cost of about \$100 for materials.

WILLIAM C. CORNELL has been appointed general sales manager of Seaman-Andwall Corp., Milwaukee, a subsidiary of American Marietta Co., as announced by John W. Spoor, president. Cornell will be responsible for the direction of sales of the company's road construction equipment and agricultural rotary tillers.



# What's On Road Contractors' Minds?

Unrealistic bidding and profitless competition lead the list of current problems. "Influx of newcomers who don't know their costs", has hit experienced firms in some states. Many contractors however are optimistic because state highway contract volume is rising.

Notes from interviews with prominent highway contractors and association leaders at AGC's recent Miami Beach convention. Exclusive to *Roads and Streets*. By Duane L. Cronk, Director, Highway Information Services, Inc., Washington, D.C.

Contractors attending the annual convention of Associated General Contractors of America, held in Miami Beach, January 19-23, were in better spirits than in the past two years. But a common viewpoint still was evident from personal interviews: *up-coming spring awards of highway work must be in large enough volume to reduce the unrealistic bidding that has become the bugaboo of the business.*

Whether higher volume would induce the lunatic fringe to bid more in line with costs, is a matter for conjecture. But there is little doubt that many contractors are in a real cost squeeze today.

"It's ridiculous that highway work must continue to go for as much as 15 percent below the engineer's estimate," Edward O. Earl of the San Xavier Rock and Sand Company of Tucson declared. Mr. Earl has no bone to pick about the progress of the highway program. He believes it is going along well in

the Southwest, but competition even for the increasing volume still continues to be "very, very stiff."

The prominent Arizona contractor reported that contract sizes are on the increase in Arizona with a few \$1 million to \$2 million jobs now being awarded (large for that area). This is a good trend, Mr. Earl believes, if there are enough smaller jobs to keep smaller contractors going.

"The commission is definitely balancing its offerings so that everyone is working. We're getting a lot of \$300,000 jobs," he said.

Mr. Earl, whose own firm handles about \$2½ million to \$3 million worth of highway work a year, estimated that 10% to 15% more firms are now bidding on highway work in Arizona. "A few" are building contractors taking an entire job and subbing out the dirt work.

James Ballard, executive secretary of the Kansas AGC chapter, had much the same sentiments: "Out here it's gotten to the place where a fellow can't afford to bid unless he absolutely has to have a job."

About 120 contractors in Mr. Ballard's chapter are bidding on highway work. Many of these firms geared up to handle the big turnpike job in Kansas several years ago. A comparable work load has not yet developed under the state road program.



● New officers of Associated General Contractors of America, Highway Division: At left, J. P. Gibbons, of Gibbons and Read, Salt Lake City, Utah, division chairman for 1959; in center, H. L. Royden, of Royden Construction Company, Phoenix, Ariz., vice-chairman; at right, retiring chairman Max C. Harrison, of Harrison Construction Co., Pittsburgh, Pa.



# The Highway Contractor: In a Squeeze

The Miami Beach convention of the Associated General Contractors of America provided a realistic revelation of road-builders' hopes and fears for the prospects of 1959.

For the past few years, the industry has been caught in a price squeeze between increasing costs for materials, labor and equipment, on one hand, and a competition which has held bid prices abnormally low on the other hand. The result—slimmer and slimmer profits.

Add to this the fact that the National Highway Program has only within the last year begun to reach the contract stage in volume, and one gets the picture of an industry that is still over-expanded. Many firms literally are fighting to stay in business until highway construction volume builds up to a point where contractors can again start putting more of their cost of doing business back into their bids.

This was the major worry back of almost every discussion at the AGC confab.

A midwest contractor claimed that some firms in his area are so close to bankruptcy that a stretch of bad weather this spring would put them out of business. "When you bid as low as we're bidding out here, everything has to go absolutely right or you're in trouble," he said.

● *Building Contractors Eye Road Work.* Robert Patton, executive secretary of the Carolinas AGC chapter, also reported a 15% increase in the number of firms bidding on highway jobs in the South. About one-third of his 400 contractor-members are highway builders. He sees a number of building contractors coming into the bidding picture on highway interchanges.

From Pittsburgh, Max Harrison, president of the Harrison Construction Company, sees more bidders per job than ever before and blames it on the publication of prior bids. This he maintains has eliminated for many the need for skill in estimating highway work.

"A lot of the bidders now coming into the highway field never bother to even go out and case the job," he said.

Competition is as keen as ever in the Pacific Northwest, according to Ray Rogers, head of the Rogers Construction Company in Portland and a past-president of AGC's highway contractor division. Rogers, who started in contracting with his brother in 1934, handles \$5 to \$8 million worth of work yearly in the region. He, too, sees an increasing number of firms bidding on highway work, some of them new outfits eager to break into the highway construction game. In spite of increases in wages and equipment, he said, the price of highway construction is not offsetting these contractor costs.

● *Concentrate on Equipment.* The only way to stay ahead in such a competitive situation, Rogers

maintained, is to concentrate on a highly mobile, highly productive equipment fleet.

"People thought we were crazy when we first began to modernize our equipment fleet years ago," he said. "It's an expensive operation. But we saw the day coming when the only way a contractor could make a buck was to obtain a high level, a high volume of work. We've got to turn out more highway for every dollar of profit these days than ever before," he held.

C. J. Carroll, executive secretary of the Michigan Road Builders Association, also reported a 10% increase in the number of firms seeking highway work over a year ago.

"Roadbuilding capacity is still so far in excess of the volume which state highway departments have put on the market that we are yet in an unhealthy bidding situation," he declared.

In Ohio, contractors are faring well in contractor work, but poor 1958 summer weather kept schedules down. A good autumn enabled some of them to recover, and 1959 spring lettings should put the industry there back on its feet, according to Charles McKee, executive secretary of the Ohio Contractors Association.

An immediate problem his members will have to face up to is the negotiation of new labor contracts this spring, McKee indicated.

Midwest contractors object to contracts which are too large, McKee said. The best competition is in the range of \$250,000 to \$1,500,000.

"When you get to \$7 million or \$8 million jobs, you limit competition to perhaps four or five firms," he argued.

Contrary to experience in other parts of the country, there are not substantially more bidders on the Ohio highway scene now than a year ago. A few building contractors are still coming in on structures, McKee said.

(Continued on page 88)

# MACKS...for every



## MACK MODEL LRX 15-TON DUMPER

Extra trips per shift are won by Mack Model LRX's jack-rabbit agility in starting, turning and backing with capacity loads aboard. Built to shrug off the relentless pounding of big-yardage shovels, LRX is a hustler over the flat or up steep grades. LRX is loaded with features for top performance and economy: Mack or Cummins diesel engines up to 220 hp... powerful air brakes for steep descents... Mack ten-speed transmission... Planidrive rear-axle assembly.

### CONDENSED SPECIFICATIONS

**PAYLOADS:** Rear dumper, 15 tons.

**DIESEL ENGINES:** 170 hp, naturally-aspirated Mack Thermodyne; 220 hp, naturally-aspirated Cummins; 205 hp, turbocharged Mack Thermodyne.

**TRANSMISSION:** Mack, selective, constant-mesh, 10 speeds forward, 2 reverse.

**CLUTCHES:** Mack single-plate, 253 sq. in. engagement (for 170 hp Mack Thermodyne); Mack two-plate, 416 sq. in. engagement (for other sizes).

**FRONT AXLE:** Mack, heavy-duty, drop-forged I-beam.

**REAR AXLE:** Mack Planidrive, with final reduction through planetary gear train within wheel hubs.

**BRAKES:** Full air, with 7½ cu. ft. compressor.

**FRAME:** Wide flange, rolled section I-beam.

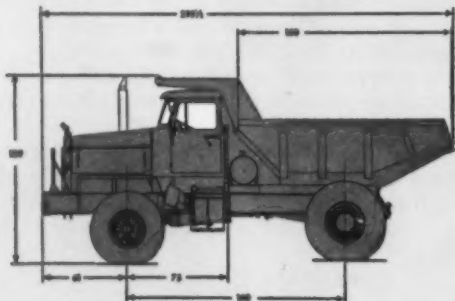
**SPRINGS:** Front, semi-elliptic with Rubber Shock Insulator suspension; rear, progressive-rate semi-elliptic with cam face slipper ends and radius rod.

**TIRES:** Standard: Front, 12.00-24 (16P) rib; rear, 14.00-24 (18P) lug. Optional: Front, 13.00-24 (18P) rib; rear, 16.00-25 (20P) lug.

**WHEELS:** Cast, spoked.

**STEERING:** 60' turning circle diameter.

**DUMP HOIST:** Twin, double-acting, 8" cylinders providing 70° dumping angle.



## MACK MODEL LVX 22½-TON DUMPER

Built to pit power and strength against slam-bang job sites, Mack LVX sticks to the job for years of sustained, like-new performance. Rugged power-train offers a 300 or 335 hp diesel engine, Mack overgeared transmission (with two-speed compound or torque converter), and Mack Planidrive rear axle. For smooth, swift maneuverability it's in a class by itself—thanks to ideal power steering system, air-assisted clutch, and offset cab for maximum visibility front and rear.

### CONDENSED SPECIFICATIONS

**PAYLOADS:** Rear dumper, 22½ tons.

**DIESEL ENGINES:** 320 hp, supercharged Cummins; 335 hp turbocharged Cummins.

**TRANSMISSIONS:** Mack, selective, constant mesh, 8 speeds forward, 2 reverse; converter and Mack 4-speed transmission; Torqmatic converter and transmission.

**CLUTCH:** Mack two-plate, air-assist with manual actuation.

**FRONT AXLE:** Mack, heavy-duty, drop-forged I-beam.

**REAR AXLE:** Mack Planidrive, with final reduction through planetary gears within wheel hubs.

**BRAKES:** Full air, with 12 cu. ft. compressor.

**FRAME:** Alloy-steel, wide flange I-beam.

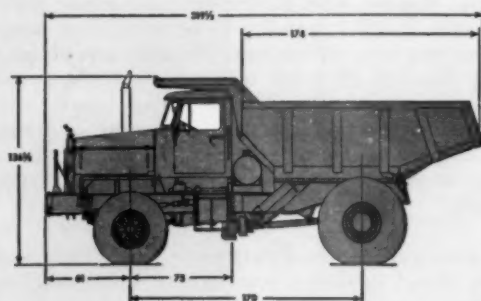
**SPRINGS:** Front, semi-elliptic with Rubber Shock Insulator suspension; rear, progressive-rate semi-elliptic with cam face slipper ends and radius rod.

**TIRES:** Front, 14.00-24 (16P) rib or 14.00-24 (20P) rib; rear, 18.00-25 (24P) lug.

**WHEELS:** Cast, spoked.

**STEERING:** Hydraulic power-steering, 62' turning circle diameter.

**DUMP HOIST:** Twin, double-acting, out-board-mounted, three-section telescopic cylinder assembly, providing 70° dumping angle.



**EXCAVATING...FILLING...EQUIPMENT HAULING...AGGREGATE AND**

# construction job...rugged or routine



## MACK B-80 SERIES TRUCKS and TRACTORS

Here's Mack profit-power personified! There are B-80 tractors for heavy-duty hauling of platform or dump trailers . . . B-80 truck chassis for dumper, mixer or utility service. B-80's are powered with 170 to 232 hp Mack gasoline or diesel engines, or with Cummins diesels from 220 to 320 hp. Choice of Mack transmissions up to 20-speed Quadruplex. Powerful, rugged braking power. Available in four- or six-wheel models including six-wheel-drive units. Option of power steering.

### CONDENSED SPECIFICATIONS

**PAYLOADS:** Rear dumper, 7 to 13 cubic yards or as mixers,  $7\frac{1}{2}$  to  $8\frac{1}{2}$  cubic yards (larger dumpers or mixers may require special provision).

**ENGINES:** Gasoline: Mack Thermodyne, 232 hp. Diesel: Mack Thermodyne, 170 hp; 205 hp, with turbocharger. Cummins, 220 hp; 320 hp with supercharger.

**TRANSMISSIONS:** Mack: Five-speed, direct or overgeared. Ten-speed (two-lever) Duplex. Twenty-speed Quadruplex. Availability contingent upon chassis models.

**FRONT AXLE:** Mack, heavy-duty, drop-

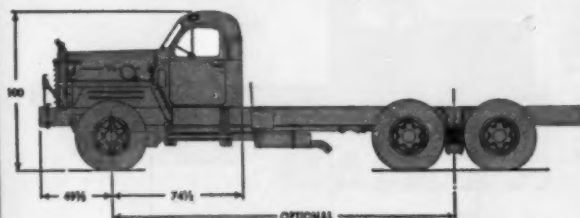
forged I-beam. Mack, front-wheel-drive, for 6x6 chassis.

**REAR AXLES:** Four-wheelers: Mack Dual Reduction, with radius rods and torque arms. Six-wheelers: Mack Balanced Bogie, Dual Reduction, through-drive, inter-axle Mack Power Divider.

**FRAME:** Channel: Alloy-steel, heat-treated; channel reinforcement, standard.

**TIRES:** Available sizes and types: 11.00-24, 12.00-24 (Four-wheeler); 11.00-22, 11.00-24, 12.00-24 (Six-wheeler). Size availability contingent upon bogie.

**STEERING:** Hydraulic power-steering (optional extra).



## Only MACKS offer all these profit-power features

Quality that can't be measured by specifications. "Specs" only tell half the Mack story. Mack on-the-job records tell the rest. For over half a century, Macks have out-earned, outworked and outlasted any other make of truck on demanding jobs. That's because every Mack starts with the most advanced design and the most durable materials . . . is built to the highest standards of strength and precision . . . is tested through every stage of construction.

**Trucks and tractors for every construction job.** As dumpers, mixers; tractors or platform trucks, dependable, economical Macks are engineered right for every important construction task.

**Widest choice of engines.** Mack offers a complete range of proved truck engines: Mack gasoline engines at 150 hp . . . Mack Thermodyne® diesel, Mack gasoline or stock diesel engines from 170 to 450 hp.

**Super-capacity and all-wheel-drive models.** For capacities up to 40 tons where maximum flotation is required, a full line of tandem rear-axle Macks is available. For utmost traction, Mack front-wheel-drive assemblies offer you four wheelers with four-wheel drive and six wheelers with six-wheel drive—models that can move heavy loads over any surface that will support a truck.

**Parts and service wherever you operate.** Mack owners everywhere have complete parts-and-service coverage. Your nearby Mack branch or distributor carries *nearly* any part you'll need on the job . . . and behind them are Mack parts depots that can ship out *any* replacement part at a moment's notice.

*For capacities of 30 tons or more where maximum flotation is required, a full line of tandem rear axle Macks is available.*

## MATERIALS HAULING . . . CONCRETE, DRY-MIX AND ASPHALT HAULING

. . . for more details circle 350 on enclosed return postal card



# MACKS...stock or custom



## MACK B-60 SERIES TRUCKS and TRACTORS

As dumpers, mixers, tractors and platform trucks, Mack B-60's have hung up records for economy on every kind of job. The "workhorse of the industry," they're powered with Mack Thermodyne gasoline or diesel engines from 170 to 205 hp. Four- and six-wheelers. Six-wheel models feature the exclusive Mack Balanced Bogie with Power Divider for non-spin traction through mud, loose gravel or sand. Longest mileage life in its class.

### CONDENSED SPECIFICATIONS

**PAYLOADS:** Rear dumper, 6 to 12 cubic yards or as mixers, 5½ to 7½ cubic yards (with options).

**ENGINES:** Gasoline: Mack Thermodyne, 185 hp. Diesel: Mack Thermodyne, 170 hp; 205 hp with turbocharger.

**TRANSMISSIONS:** Mack: Five-speed, direct. Ten-speed (two-lever) Duplex. Twenty-speed Quadruplex. Ten- and twenty-speeds both on- and off-highway types. Availability contingent upon chassis models.

**FRONT AXLES:** Mack, heavy-duty, drop-forged I-beam. Three available sizes.

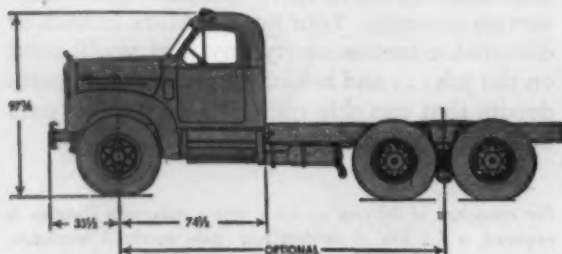
**REAR AXLES:** Four-wheelers: Mack Dual Reduction—with radius rods and torque

arms. Six-wheelers: Mack Balanced Bogie, Dual Reduction, through-drive, Inter-axle Mack Power Divider. Three bogie sizes available.

**FRAME:** Channel: Alloy-steel, heat-treated, pressed; channel reinforcements for maximum services (standard or optional extra).

**TIRES:** Available sizes and types: 11.00-24, 12.00-24 (Four-wheeler). 10.00-20, 10.00-22, 11.00-20, 11.00-22, 11.00-24 (Six-wheeler). Size availability contingent upon bogies required.

**STEERING:** Hydraulic-power type (optional extra).



## MACK B-40 SERIES TRUCKS and TRACTORS

With big-truck capacity and stamina . . . with small-truck agility and economy . . . Mack B-40's are always in demand as dumpers, tractors, mixers and platform trucks. Mack Magnadyne gasoline engines develop 150 hp at low, life-prolonging engine speeds. Mack transmissions up to 20-speed "Quads." Four-wheel models and six-wheelers with Balanced Bogie with Power Divider. All-wheel-drive models, as well. Like all Macks, B-40's are engineered, built and tested with one objective: sure-fire performance on rugged jobs over long periods of time.

### CONDENSED SPECIFICATIONS

**PAYLOADS:** Rear dumper, 5 to 10 cubic yards or as mixers, 5½ to 6 cubic yards (with options).

**ENGINE:** Gasoline: Mack Magnadyne, 150 hp.

**TRANSMISSIONS:** Mack: Five-speed, direct. Ten-speed two-lever Duplex. Twenty-speed Quadruplex. Ten- and twenty-speed, both on- and off-highway types. Availability contingent upon chassis models.

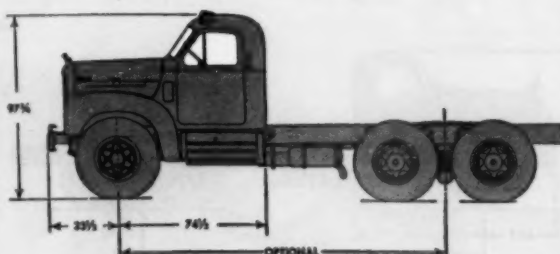
**FRONT AXLES:** Mack, heavy-duty, drop-forged I-beam. Four sizes. Mack, front-wheel drive (for 6x6 chassis).

**REAR AXLES:** Four-wheelers: Mack Dual Reduction. Six-wheeler Bogie: Mack Balanced Bogie, Dual Reduction, through-drive, Inter-axle Mack Power Divider.

**FRAME:** Channel: Alloy-steel, heat-treated, pressed; appropriate inside-channel reinforcement (standard or optional extra).

**TIRES:** Available sizes and types: 10.00-20, 11.00-20, 11.00-22 (Four-wheeler). 8.25-20, 9.00-20, 10.00-20, 10.00-22, 11.00-20 (Six-wheeler). Availability contingent upon chassis.

**STEERING:** Hydraulic power-steering (optional extra).



**EXCAVATING . . . FILLING . . . EQUIPMENT HAULING . . . AGGREGATE AND**



# built...for your specific job

## Here's how MACK custom assembles the truck to fit your job

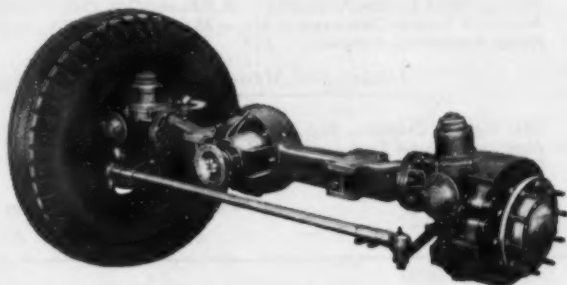
Mack builds every major component in a wide range of capacities ranging through super-duty. So—

Whatever kind of operation you have... whatever loads you haul... whatever problems you face by way of terrain, climate or grades... we can select the interchangeable, Mack-built components that meet these conditions and custom assemble them into the most efficient truck you can buy. (Stock models available too, of course.)

### And only Mack offers quality features like these—

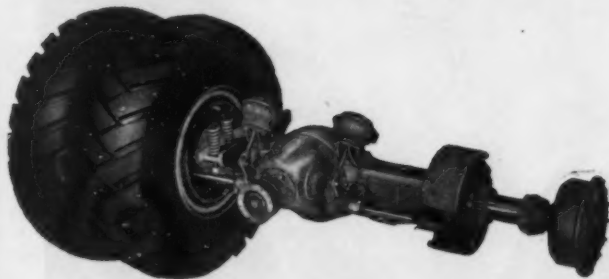
#### THE STRENGTH OF MACK-BUILT FRONT AXLES

Mack's drop-forged I-beam front axles are made super strong for long, trouble-free service. Extensive use of heat-treated steels for crucial parts means minimum maintenance. And Mack's exclusive front-drive axle for all-wheel-drive trucks offer the greatest ground clearance and strength of any made—with all parts fully enclosed.



#### THE DURABILITY OF MACK-BUILT 2-WHEEL REAR AXLES

Mack's two-wheel, rear-axle assemblies have an unmatched reputation for service under strenuous conditions. Dual Reduction, gear-type differential and Mack's famous planetary gear reduction at the wheel hubs (Planidrive) provide the smooth distribution of power vital to top truck performance.



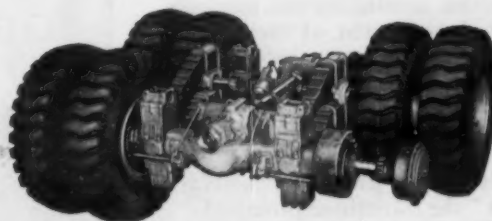
#### THE LONG LIFE OF MACK-BUILT TRANSMISSIONS

Service records prove that Mack transmissions—like this 20-speed Quadruplex—stand up to heavy-duty hauling far longer and need less attention than any others—thanks to the use of the finest gear metals known... to painstaking precision manufacture... and to exclusive Tetrapoid gear design that gives maximum strength, longer life and smoother action. Five- to twenty-speed units, each with ideal ratio steps.



#### THE TRACTION OF MACK-BUILT BALANCED BOGIES

Macks perform where other trucks bog down—in mud, loose gravel or sand—thanks to Mack's exclusive Balanced Bogie with Power Divider. It's a 4-wheel-drive, tandem rear-axle assembly with an inter-axle differential that directs the most power to the wheels having greater traction. Planidrive final reduction in all four hubs eliminates the need for bulky carriers, differentials or axle shafts. Clearance is increased, weight is reduced, maintenance is fast and simple.



## MACK first name for TRUCKS

Mack Trucks, Inc., Plainfield, New Jersey • In Canada: Mack Trucks of Canada, Ltd.

**MATERIALS HAULING...CONCRETE, DRY-MIX AND ASPHALT HAULING**

... for more details circle 354 on enclosed return postal card

## Contractor's Problems

(Continued from page 83)

● **Just About Bottom.** Even some of the most pessimistic contractors saw better days ahead, however. A number indicated they believe the industry has reached the bottom of its troubles, that road-building volume will build up this spring and that contractors can be more choosy in selecting jobs to bid on.

Dwight Winkelman, an AGC past-president and head of a large New York construction firm doing highway construction in several states, believes that competition will soften somewhat in the months ahead.

"I am optimistic. I think we've hit just about the bottom and things will soon start looking up. Volume is reaching the place where there may begin to be some profit in highway work by perhaps mid-year. A lot of the new firms that came into the highway program for a quick killing have been shaken out, and as volume builds up, our personnel and equipment will start at a more productive rate."

Winkelman blamed the competition problems of the industry on factors which, he said, go back several years—first, because it is considered easy to estimate in this field, and second, because state highway departments publish cost figures which newcomers pick up and use in submitting a bid for work, without adequate provision for overhead and profit.

"We can't have a healthy contracting industry unless there is an allowance for profit in our operations," he asserted. "The firms that will survive during the next few years will be those whose leaders sit down and very deliberately figure their own costs, forgetting what the other fellow will throw in."

● **Materials, Equipment Costs Probed.** Meanwhile, the contractors are hoping for some slow-down in the materials price spiral. They were quick to commend the cement industry for its announcement, not long ago, that they could quote from cement prices in 1959. And the AGC Material Supply Committee pointed out, although steel producers are insisting on escalation clauses, competitive conditions are minimizing the amount of escalation quoted and many independent fabricators have quite generally been quoting firm prices.

"We intend to further impress them with the desirability of submitting firm prices to contractors," the committee promised.

There is little hope of any decline in the prices of equipment, the contractors learned from their joint cooperative committee with the Construction Industry Manufacturers' Association. Equipment

manufacturers are burdened by three-year labor contracts which will increase the cost of equipment for the next few years at

about the same rate experienced for the past decade, they predicted.

Nor will there be relief on the

## AGC SAFETY WINNERS

Highway contractors rated high among the nation's construction firms honored as safest at the AGC Miami Beach convention. They are:

### Best 5-Year Records

Midland Construction Co., Midland, Mich.  
Mott Construction Co., Centerville, Iowa  
W. H. Harvie, Inc., Detroit, Mich.

### Best 10 Year Records

Geo. K. Werner Son, Clay Center, Nebr.  
L. R. Falk Construction Co., St. Ansgar, Iowa  
Burrell Constr. & Supply Co., New Kensington, Pa.

Several of the state chapters with highway contractor memberships walked off with top awards, also, for having the highest percentage of members cooperating in the AGC's accident prevention drive. They are:

### Over 100 Members

Michigan Road Builders Association — 88.1 Points  
Associated General Contractors of Mo. — 85.6  
Kansas Contractors Association — 85.6

### Under 100 Members

Ohio Highway Chapter — 90.5  
Associated General Contractors of W. Va. — 90.8  
Ohio Highway Chapter — 90.5



● New AGC top officers for 1959: president-elect James C. Cawdrey, of Cawdrey & Vemo, Seattle, Washington; and John A. Volpe, of John A. Volpe Construction Co., Malden, Mass. (Volpe is former interim Federal Highway Administrator.)

labor front as far as contractors are concerned, the convention was told. Organizing efforts are being stepped up in those parts of the country which are open-shop, and in a number of states long-term contracts must be renegotiated again this spring with various crafts. Contractors from these regions foresaw that their labor costs could go in only one direction—upward.

Many of those in attendance at the assembly pinned their hope for the recovery of the industry on the increasing volume of contract awards now coming out of the National Highway Program. A few contractors who have forsaken highway work for the more profitable heavy construction during the past few years, indicated that they will become more active in the highway market this spring, when, they believe, contract awarding schedules will create a sizeable volume of new work.

A number of national highway officials, also, told the AGC contractors at Miami they could look forward to better prospects in 1959.

#### ● *Contract Practices Improve.*

In the meantime, a joint committee of the AGC and the American Association of State Highway Officials predicted that business relationships with state highway departments will continue to improve during the coming months. It cited a number of areas in which contractors are being given more consideration by these organizations. Over the past few months (see *Roads and Streets*, January) the committee has been urging reforms in highway department contract procedures which would:

- Expedite final payments to contractors for work completed
- Reduce the percentage of retained payments during the course of the job
- Permits payment for materials delivered to the job site
- Eliminate or cut retained quantities.

"There have been many favorable changes and revisions to construction contracting practices since these recommendations were developed a year ago," M.

Clare Miller, Kansas contractor and AGC chairman of the joint committee, reported. He cited the Texas Highway Department as the best example of what can be done to expedite partial and final payments.

"They seemingly leave no stone unturned in their effort to make payments promptly," he said.

Since the committee started its campaign, retained percentages have been reduced in some ten states and similar action is expected in more as appropriate legislation can be passed to permit it. Payment for delivered materials has also received favorable attention by state highway departments.

The contractors also want more widespread adoption of "end result" specifications where justified. They commend the specifications used by the State of Colorado as exemplary:

"End-result specifications will encourage the use of new and improved methods of construction and equipment in the field as soon as it hits the market. We'll save money for ourselves and the highway departments if they permit that flexibility."

The association is pressing for sufficient time between advertising and awarding of contract, so that bidders can investigate and estimate the project thoroughly. "It is our firm belief that a minimum advertising period of three weeks, with plans and specifications provided, should become the established practice," Chairman Miller declared.

All of these things will help to ease the industry through a period which is harsh, to put it mildly, AGC leaders believe.

#### Check Bids for Errors!

**S**LOPPY PREPARATION of bids, causing rejection on account of errors, is still a problem with the state highway departments and a custom that doesn't do the contractors any good.

"It is distressing to have so many bids rejected because of errors of a nature which gives the highway departments little choice in the matter," notes Archer B. Gay, engineer-director of the Virginia

Road Builders Association in a bulletin to its members.

In order to be of assistance in assuring the acceptance of bids, the Virginia Department of Highways has in recent months attached a check list on the front of every proposal, showing the things which would be cause for rejection if omitted. Failure to initial changes in price is one of the chief reasons for rejections.

"If any erasing is done on your bid sheet, you should initial it to insure acceptance on the proposal," counseled Mr. Gay, who went on in this bulletin to note a healthy sign i.e., the fact that some Virginia contractors are bidding prices which are occasionally over the engineer's estimate. These occasional high bids of course must be rejected where the state requires that the bids be under the estimate. But contractors who constantly bid under may not be realistically computing their costs during this period of rising wages and material prices.

**HOW TO BECOME A PROFESSIONAL ENGINEER.** By John Constance. 288 pages; \$5.50. McGraw-Hill Book Information Service (327 W. 41st St., New York 36, N.Y.)

This book is of interest to the 500,000 engineers not licensed at present; a guidebook for those and for young graduates on how to meet various state registration laws and especially to comply with the seven basic requirements for licensing.

#### Frost Heaving

The problem of springtime frost heaving has been solved by a Canadian manufacturer working in cooperation with a university and Canada's railroads.

The solution involves treatment with Lignosol, a by-product of sulphite pulp manufacture. An experimental program at the University of Alberta indicated that Lignosol would eliminate or reduce frost heaves by decreasing the permeability of the soil.

Along 34 stretches of track which heaved each spring, section gangs injected Lignosol at six foot intervals over a period of three years. Using a jack hammer, they first drove injection pipes four of five feet into the ground, just outside the ties. The depth was adjusted so that the treatment would be applied between the frost line and the ground water level, and Lignosol was pumped into each of the pipes until it broke through to the surface of the roadbed.

Results over a three-year period have brought about considerable savings for the railroad, according to the manufacturer, Lignosol Chemicals, Ltd., 220 Shell Tower Bldg., Montreal, Quebec.



# Southern Pacific bridges an inland sea

Great Salt Lake, Utah—Take a mountain of rock, sand and gravel—36,000,000 yd of it...stretch it 12.6 miles with the help of the world's biggest tractor shovels... then sink it 68 to 85 feet deep into Great Salt Lake. That's how the men of

Morrison-Knudsen are building a new, solid-fill, deep-water, roadbed for Southern Pacific Railroad across Utah's great inland sea. Allis-Chalmers HD-21G tractor shovels play an important role in this gigantic undertaking.



## Multi-million dollar job passes halfway mark

The monumental job, scheduled to finish in 1959, triggered some of the largest non-atomic blasts in history to supply fill material. One blast powered by 2,138,000 pounds of explosives yielded 3,700,000 cu yd of broken rock.

Most of the fill is being placed by a fleet of eleven barges loaded by two methods. One is a spectacular two-mile conveyor system said to be the world's largest in terms of tonnage moved—4,000 to 4,200 tons per hour.

## 4-yd HD-21G's work ashore and afloat

The second method is by trucks that dump directly to barges. This fleet of 17-yd dump trucks moves constantly from stockpiles adjoining railroad tracks to the barges on a 20-hour a day schedule. Much of the truck loading is handled by Allis-Chalmers tractor shovels, only tractor shovels on the job.

With characteristic versatility, the tractor shovels are also able to board the barges and help place



...move ahead with **ALLIS-CHALMERS**.





Giant 225-hp Allis-Chalmers HD-21G tractor shovels handle their share of the fabulous 36,000,000 cu yd of fill going into the causeway. Production on the job has hit as high as 100,000 cu yd in a single day.

rock ballast on the causeway itself. If their loading ability is needed on the opposite shore, they are easily transported by barge or regularly-scheduled work train.

#### For a big job—big machines

Men talk about the Salt Lake Causeway job in superlatives. Big machines moving tonnage at a record-breaking pace. And the HD-21G's on-the-job advantages match it all the way: the *highest* lift and the *longest* reach—with the *biggest* load. From ground

level, the 4-yd bucket dumps handily up to 13 ft, 4 in.—high enough to clear the sides of the biggest haulers.

Morrison-Knudsen keeps close service records of each machine on the job. Service logs for the HD-21G's show they put in maximum time—offer top availability to keep producing.

Here's actual proof on a heavy-duty tractor shovel operation

that Allis-Chalmers maintenance and service cost is low—that you get more profit-making availability and production from your Allis-Chalmers equipment. Your Allis-Chalmers construction machinery dealer will demonstrate the size tractor shovel that fits *your* work—1½, 2¼, 3 or 4-yd capacity. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



225 net engine hp

66,500 lb

4-yd bucket capacity

HD-21G

## Power for a growing world

... for more details circle 276 on enclosed return postal card

**ROADS AND STREETS, March, 1959**

## What Somebody on Your Staff Needs to Know About—

# KEEPING YOUR TIRES IN SHAPE

*A substantial percentage of your investment in earth-moving equipment is in tires, and that also goes for your hourly cost. The stakes are high in truck operation, too—hence this reminder: Good tire “look after” does more than just keep your job humming. It saves big out-of-pocket tire replacement bills too.*

**By Frank W. Fox**

Formerly Service and Sales Engineer with  
Goodyear Tire & Rubber Company

**S**HAPING UP, on a construction job, is one of the last details which follow the placement of the fill, laying of the concrete, etc.

On the contrary, seeing to it that your tires are “shaped up” is a task that should be attended to first, last

and at all times—if excessive tire expense and profit wasting vehicle downtime are to be avoided.

The word “shape” in reference to tires has two meanings. The first of these refers to the actual shape of the tires as they flatten out under the load and flex in the sidewalls as the wheels turn.

The other meaning refers to the general condition of the tires with respect to tread wear and surface

injuries such as cuts, snags or chafing.

To maintain tires in good shape, in the first sense, requires regular attention at the air pump. The conditions that endanger the performance of tires, in the general sense, require overall inspection at frequent intervals on the job or between shifts.

In either case, keeping tires “in shape” is a chore that should be made a definite assignment of someone in contact with experienced tire service or sales personnel. He needs this contact experience to know tire construction and care. And he needs it to realize what “on the job” service the tires should get to keep them working, minimize injuries and thus prevent early failures, and excessive repair expense or new tire bills.

By what measurement can it be determined when a tire has a “good” shape?

Tire engineers through the years have studied the results of tire tests under all operating conditions and have drawn up tables specifying the air pressure which gives the chance for best tire performance under

### Count the \$\$\$

Many thousands of dollars are tied up in these three earthmovers. A few untimely replacements can eat up the profits. Wrong inflation can slow the yardage. A plan of action and chain of tight command of tire supervision on the job is the only answer today.



specified conditions of load, speed and road. (See Table I.)

● **Inflation a Basic Question.** The basic element of each table is the shape the tire assumes between the wheel rim and the ground surface—in other words, the tire deflection. In high speed, good road service, the deflection is relatively low to give stability and keep down the heat developed by the rapid flexing of the tire sidewalls—air pressure is high.

In slow, off-the-road hauls, a much higher deflection is safe and gives extra cushioning, flotation, traction in soft going—air pressure is low.

For example, a 1400-24 tire in highway service with a 9740 lb. load should be inflated to 80 lb. per sq. in. (psi). A tire of the same size on a pull-type scraper in earthmoving service at speeds under 10 mph can handle the same load with between 50 and 55 psi of air.

In the first case the deflection is 1.8 in.; in the other case, 3.2 in.—nearly twice as great.

Under any set of speed and road conditions, pressures may be varied to match loads of different weights, i.e.:

#### Right Load and Pressure

Earthmoving Service—30 mph Max.  
(2400-29, 24-ply rating)

Load (1 lb.)	Pressure (psi)
16,330	25
18,200	30
19,890	35
21,500	40
23,020	45

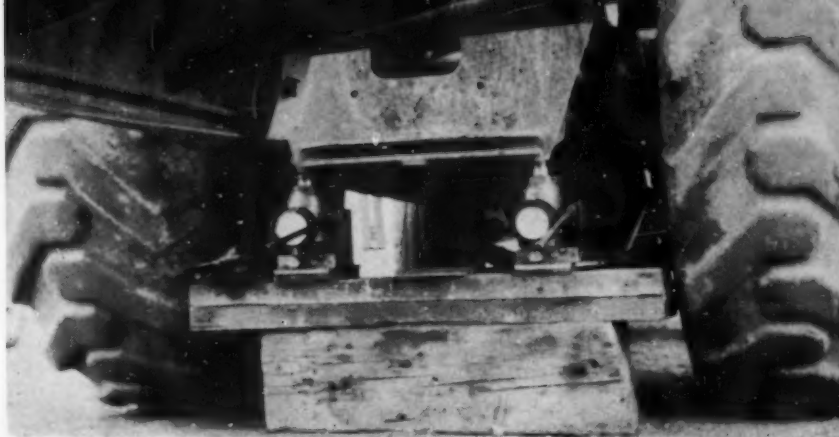
Any of the above corresponding loads and inflations will give the same deflection of the tires and equally satisfactory all-round performance.

● **What Ply Rating?** The availability of tires of different ply ratings in the same size makes possible the handling of a wider range of loads with a certain vehicle without changing tire size.

Extra plies permit the safe use of higher air pressures which will, in turn, support greater loads without excess deflection.

For example, the relatively new wide-base type earthmover size 29.5-29 is made in 16, 22, 28 and 34-ply rating constructions.

The 16ply rating tire has a pressure limit of 25 psi with which it will handle (up to 30 mph) 18,600 lb. load—probable use, a dozer or industrial tractor which pushes or pulls its load.



● Weighing jacks in place under earthmover rear axle—the dials tell the weight on the axle, so that you can set your tire inflation correctly.

TABLE I  
List of Load and Inflation Tables

Tire & Rim Assoc. No.	Kind of Service	Speed Limit
TB-2D	Highway	None
EM-3D	Earthmoving, Mining, Logging	30 mph
EM-2C	Earthmoving	10 mph
WEM-1	Wide Base Type Earthmoving	30 mph
WEM-2	Wide Base Type Earthmoving	10 mph
RG-3A	Road Graders	25 mph
LP-1C	Mobile Cranes, Shovels, Mining Cars	5 mph
LP-3C	Low Platform Trailers, Straddle Carriers	20 mph

The 22-ply rating tire may be inflated to 35 psi with a load rating of 22,620 lb.; the 28-ply rating limit is 45 psi for a load of 26,200 lb.; while the 34-ply rating tire can handle 55 lb. and a 29,490 lb. load.

If a tractor wagon or scraper outfit is being bought to handle cinders, the 22-ply rating tires would likely be adequate; for ordinary earthmoving the 28-ply rating tire would be needed, for rock or heavy ore, the 34-ply.

The above facts pinpoint the main fact that to inflate tires prop-

erly, the load per tire should be known. This information can be obtained, on the job and with slight interference with working schedules, by means of portable weighing jacks, which in up to 50-ton capacity are made available in many locations in the country by leading tire manufacturers.

A request through the tire supplier to the tire company branch will result in the proper information to enable any operator to put his tires in good shape—airwise—right on the job.

- Rigid inspection pays off—by catching little injuries before they become failures.
- Keep inflation to pressures recommended by the manufacturer for your job conditions—a job that takes *hour-to-hour attention* by responsible personnel.
- Use portable weighing jacks if necessary to always know the load in pounds on each tire.
- Remember that smooth hard haulroads and fast runs call for higher pressure to minimize heat; soft going, lower pressures for better flotation.
- Get your dealer's advice on tread type, number of plies, other details of tire design. The *best* design for your work may save a lot of money over the next best.





- Inspecting tires and marking cuts to be skived is an important detail that must be done promptly and with judgment. If cuts are too deep, remove from service for vulcanized repair.

- Tread cut skived to prevent stone lodging.



**TABLE II**  
**Comparison—Loads and Inflation Recommended**  
For 1400-24 20-ply rating tires under different operating conditions

Type of Service	Speed—MPH	Load—Lbs.	Inflation—Lbs.
Highway	None Specified	10360	95
Earthmoving, Mining, Logging	30	10690	75
Earthmoving	10	11010	65
Road Grader*	25	5780	35
Crane and Shovel	5	18520	100
Low Platform Trailer	20	13820	95

\*12-ply Rating Tire

That however is only half the battle of air pressure. The rest of it is the matter of maintenance of correct pressure at all times.

Checks should be made at frequent intervals which will prevent the use of tires with pressure lower than 10 percent under the recommended figure.

If occasionally loads are extra heavy, it is better to add pressure to

as much as 10 lb. above the normal limit than to operate with the excess deflection that would otherwise exist. Reducing speed will also reduce the effect of overloading of tires as indicated by differences in maximum load ratings in the different tables. (See Table II).

In earthmoving service at 30 mph, a 33.5-33 32-ply rating tire will handle 36,470 lbs. with 45 psi. pressure,

while at 10 mph at the same pressure the load may be 40,850 lb. On four tires this is over eight tons extra capacity gained without overworking the tire equipment.

Even though tires are inflated correctly for the loads carried and the operating conditions they must meet, in the normal course of construction work they are subjected to hazards which can damage them more or less at any time.

● **Watch Cuts, Bruises.** To guard against slight injuries becoming major causes of failure and expense, a system of regular inspection should be maintained.

At every turn at the greasing station, for instance, a complete visual inspection should be made to detect cuts, snags or indications of damage so that proper steps can be taken at once.

When surface cuts are such that dirt and small stones will become embedded in the tread and will tend to grind their way into the body of the tire, they should be probed, cleaned out and then skived out in a bevelled fashion. The cutting away of a small amount of tread is a small price to pay for eliminating a dangerous condition.

Loose pieces of tread rubber which will tend to tear larger pieces of tread away should also be cut off.

When cuts extend into the body of earthmover tires by more than two or four plies, steps should be taken at once for removal and delivery to a competent repair establishment.

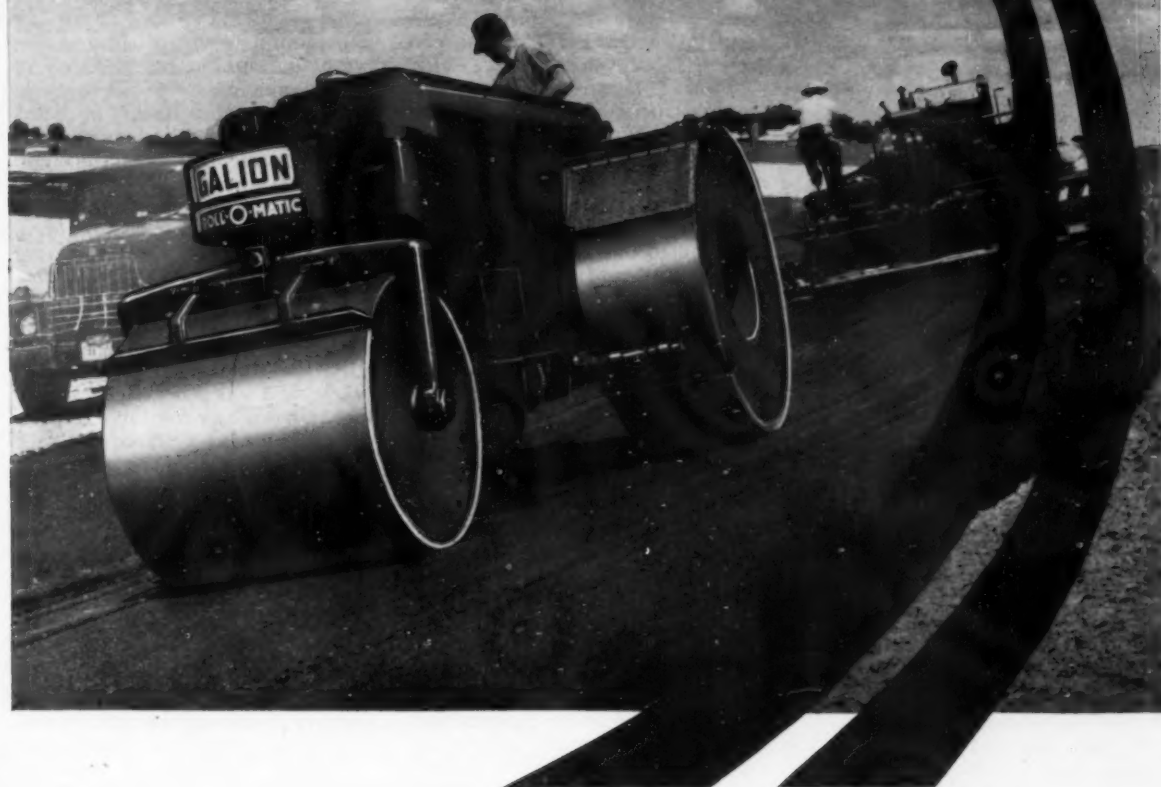
(Continued on page 102)

- Maximum loading requires careful attention to tire air pressure.





# PLANNING AHEAD FOR THE BIG JOBS ?



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ROADS AND STREETS, March, 1959

95

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AND USED EQUIPMENT**

## AGC Asks Better

## Labor Reform Bills

*Asks legislation to outlaw restrictive tactics of industrial unions. Seeks ban on bombing of construction equipment.*

**SERIOUS DEFECTS** in the major labor reform bills which could have "disastrous effects" upon the construction industry were pointed up by a spokesman for the Associated General Contractors of America. The need is for legislation to outlaw bombing and vandalism of contractors' equipment and property, and to outlaw restrictive provisions in labor agreements pressured by powerful industrial unions to prevent their employers from utilizing the services of construction contractors.

Frank J. Rooney, of Miami, Fla., AGC past president and chairman of its Labor Committee, testifying before a Senate Labor Subcommittee, said the association endorsed the general principles directed solely at labor reform in both the Administration and Kennedy-Ervin bills. But the association strongly opposed inclusion of any Taft-Hartley Act amendments in the legislation until after thorough study by an advisory group.

Speaking for the national association of 7,300 leading construction firms which perform the majority of contract construction in the United States, Mr. Rooney listed the objectionable amendments to those bills which would (1) relax bans on secondary boycotts in the construction industry (in the Administration bill); and (2) permit pre-hire agreements and compulsory unionism after seven days of employment (in the Kennedy-Ervin bill).

In support of the second point, Mr. Rooney cited a statement from Sen. John McClellan (D-Ark.) which pointed out the disadvantages of pre-hire agreements.

Some amendments. Mr. Rooney discussed amendments to Taft-Hartley that are favored by the AGC:

- Empower and direct the National Labor Relations Board to certify a building trades union as

a bargaining agent of construction workmen without the necessity of certification election where there existed a previous history of collective bargaining and where the parties voluntarily petitioned the board for such a certification.

- Clarify the law to permit payments to apprentice training programs, jointly administered by labor and management.

- Close the loopholes on secondary boycotts.

However, Mr. Rooney emphasized that the AGC believed that "these and all other Taft-Hartley amendments" in the labor reform bills "should be deferred for later consideration by the Congress after thorough study by the technical advisory group to this committee."

Mr. Rooney also stressed the need for strong federal legislation to outlaw all forms of bombing of property, whether or not connected with a labor dispute. And he endorsed "the principles of S. 188 and similar legislation which would make it a federal crime to use explosives to damage or destroy real or personal property in commerce."

"Recent bombings of construction equipment and contractors' offices in the Middle West," he said, "show the need for granting the FBI jurisdiction since this appears to be vandalism and sabotage which goes beyond state lines and is a national network."

He also recommended legislation to outlaw the restrictive provisions of certain labor agreements which "prevent owners from doing their construction work through the efficient and time-honored contract method" instead of being forced to do their construction work with their own forces.

"Such restrictive agreements are in fact a burden on commerce and restraint of trade, and should be clearly outlawed," he said.



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The new Caterpillar No. 933 Series F Traxcavator with a larger, 11 $\frac{1}{8}$  cu. yd. bucket is ready now to set new production records. It is the latest achievement of Caterpillar's "Project Paydirt\*."

Field tests on a variety of jobs and working conditions proved the new Series F delivers up to 22 percent more production than previous models of this popular machine.

The power source of the new No. 933 is an efficient new 52 HP Cat Diesel Engine. It features a new cylinder block, engine balancer for smooth performance, unit-serviced fuel pump, and a side-mounted starting engine for compactness and economy.

A new transmission and a heavier final drive give the new No. 933 the speed and stamina to maintain quick, easy loading and faster cycling. Cycle time is further shortened by a high-speed reverse—3.67 MPH.

The new machine features greater operator comfort and efficiency. All controls are conveniently visible. Leg room is ample. The mechanical advantage of the steering clutch brakes has been increased 30% for easier operation. A new, larger seat is more comfortable, continues to provide good visibility, both front and back.

And the new No. 933 retains the superior design features that have made Traxcavators first choice on jobs throughout the world. The exclusive oil clutch, automatic bucket controls, 40° tilt-back, heavy-duty undercarriage, unit design and construction — to name just a few. And the exclusive Side Dump Bucket is available to add versatility.

Get the complete story on the new No. 933 from your Caterpillar Dealer. Ask him to demonstrate how this Traxcavator can step up production on your job.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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**\* PROJECT PAYDIRT:** Caterpillar's multi-million-dollar research and development program — to meet the continuing challenge of the greatest construction era in history with the most productive earthmoving machines ever developed.

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# Ripper and Scrapers

Eat Away 107-Ft  
Rocky Cut



*Some harder layers were drilled and shot, and a shovel worked the top lift of 1,100,000 cubic yard cut on this Ohio job. But scrapers handled the rest, with help of a heavy tractor-mounted ripper and tandem push-loading.*

Every big cut on a road job is a new adventure, and the 1,100,000 cut on one end of C. F. Replogle's Ohio "Route 1" project, near Mansfield during the 1958 season, was no exception. Tempering the risk here was the long experience of personnel of this Circleville, Ohio, firm. They bet on scrapers for the main part of the excavation. Here are some of the details.

The project was a 6-mile segment of Ohio Interstate 71 (the diagonal meant originally to be Ohio's second turnpike). In January of 1958 Replogle was awarded a \$4.6 million package contract which included 1,600,000 cu. yd. of earth and 1,300,000 cu. yd. of rock excavation. The

- Ripping uphill "against the grain," using D9 with two teeth. This picture looks toward the rear on high part of the partially completed cut floor.





● The big cut nearing completion, as seen in June, 1958. Note benching. All of the haul was out of this end, and the last yardage came out of the far end, in order to keep a down-hill loading pattern. MRS tractors seen going and coming with big pans.

big hill in question was right at the east end of the job—meaning the haul was all in one direction. The cut required was 107 ft. deep maximum and 1,700 ft. long.

Borings for bidding data were made in advance for the state by Mobile Drilling Co., of Indianapolis, Indiana. Replogle also made some test borings. It was determined that the hill consisted of alternate layers of sandstone and shale of varying quality, with layers tipped at an angle of about 15 degrees along the road axis (see accompanying sketch).

Bulldozers helped with the clearing, and dozers and scrapers took out topsoil to hardpan. The first lift of 10 ft. or more was excavated with a Lima 4-yd. (Model 1601) shovel. Some hard rock was encountered at this and other horizons, and where necessary drilling and blasting were resorted to. A McCarthy drill with 9-in. auger (or Robbins with 8-in. rotary cone bit) put down holes to varying depth at patterns typically 18 by 24 ft. Blasting under the open conditions was done with ammonium nitrate using dynamite as primer. The ammonium nitrate was brought in 100-lb. sacks, treated with fuel oil on the job, and repacked in small polyethylene bags for dropping in the holes.

The rock work never stopped all winter except for one sub-zero period.

Then in the spring, with dryer conditions and somewhat softer material, the main part of the yard-

age began to come out with the scrapers. The cut was well toward the bottom by June when the ac-



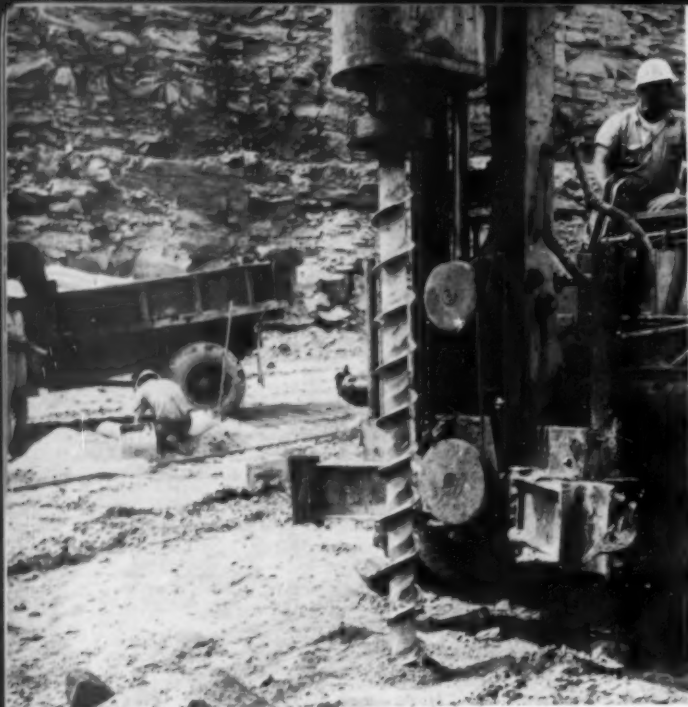
● Section along centerline of cut, showing how the rock dipped at an angle opposite to the prevailing haul road slope.



● McCarthy drill with 9-in. auger put down blast holes where hard laminations required shooting.



● Pusher operator "polishes each shining moment" of waiting by skimming with the block to smooth a path or dislodge a rock.



● Dozer blade again seen being used at slight angle to loosen embedded rocks, working uphill against the strata.

● Another look at the auger which worked successfully in the medium-hard formations of sandstone and shale.



● A MRS Model 250 tractor with 41-yd. scraper (loose, heaped) being push-loaded by a pair of D9 Caterpillars. The shaley ground here has been partially ripped.



companying photographs were taken. A typical working spread at this point consisted of 8 rubber-tired tractor-scraper units, 4 heavy crawlers, and a motor grader for the haul road. The scrapers comprised one LeT-Wesco Model B and seven units drawn by MRS tractors pulling Wooldridge (41 yd. loose, heaped), Cat 90 (30 yd.) or Cat 80 (23 yd.) pans. The MRS tractors were Model 200s or 190s plus four of the new Model 250s with Cummins VT-12BI 600 hp engines, the latter teamed up with the big Wooldridges.

Ripping and push-loading for this 8-scraper squadron were four Caterpillar D9 tractors, one carrying a No. 9 hydraulic ripper and a cable-operated tilting dozer, and three with pusher blocks fore and aft. The grader was a Cat 12. This team working on a haul-out over a long adjacent fill, with one-way hauls ranging from 2,000 ft. or less up to 7,000 ft.

At this point it will be interesting to again look at the accompanying sketch, and note how the rock planes dipped through this  
(Continued on page 102)

● Looking through the cut in direction of haul-out. Scrapers working shaley, bouldery material that has been loosened by ripping.

Here's Another Treacherous Job

# Whipped by **Deere Weight and Size**



"A machine bigger than the John Deere 440 just couldn't have done the job," reports Jack Sullivan, owner of this Crawler-Dozer working on northern Wisconsin roads. Bulldozing out shoulders on long stretches of highway, Sullivan and his operator, Clifford Davis, discovered a number of advantages built into this sure-footed crawler.

A four-to-one slope had to be held on the job, and much of the way the tractor had to travel within inches of a treacherous, watery bogland.

"Under these conditions, the 440 worked out fine. For this kind of work, with the angle of slope we had, the blade was ideal," commented the owner. Operator Clifford Davis added, "the 440 has plenty of power, and blade cut and control are so accurate that very little handwork is required after I get done."



Deere weight and size are the key to solving many jobs in street and highway work. John Deere Industrial Units include crawler and wheel-type tractors with Diesel or gasoline engine, and matched equipment from blades and scarifiers to loaders and elevating scrapers. All units are available on the John Deere Credit Plan.



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## RIPPER AND SCRAPERS

(Continued from page 100)

cut. Also note that the haul road at virtually all stages sloped downward "cross grain" with the rock. The contractor took advantage of this situation repeatedly to rip against the grain, and occasionally even to push-load before the turn-around for this reason.

Ripping against the strata often enabled the operator to get the pair of teeth more effectively under the rock. At other times, there was no such advantage and the ripping was done in either direction. In any event, the ripping tractor was an indispensable machine where the material wasn't blasted, and in fact the availability of a very heavy tractor with mounted ripper made it possible to rip much yardage that in former years would have required blasting.

Again, working often against the rock planes, the operator loosened many big rocks with the dozer blade corner. Much rocky material broke down under the equipment or was already small enough to be taken up by scrapers. Large fragments were dozed to one side for secondary shooting or breaking down with a drop ball.

Replogle's operators showed good skill and teamwork in this rough work, and apparently had been well taught in the art of keeping the working floor smoothed out. Every forward or backup movement was a productive one in some way. The ripper tractor usually dragged its dozer blade when backing, and even the front push blocks were sometimes used to skim away high spots or dislodge rocks in the path of the next loading operation.

Push loading was done with two D9s in tandem whenever a second machine was available for making contact over all or any major part of a loading pass. When the going was toughest, the power of two pushers was needed from the start. The tandem method, plus effort to keep load paths on as steep a down grade as possible, all helped add up to a daily production which satisfied the Replogle management. The ripper-dozers also assisted in push-loading. The figures were highly variable, due to wet weather, changeable conditions, and different haul distances. But the team in the big cut accounted for a husky percentage of the 20,000 cu. yd. or more of earth and rock moved per

10-hour day when the entire project was in full swing.

C. F. Replogle's job here was one of several Ohio projects being handled simultaneously and the firm's trailers "were always bringing equipment in and out." Another report will deal with some of the interesting facilities for keeping the equipment fueled, serviced and repaired—including the company's

"greenhouse," a plastic tarp affair—see a forthcoming issue.

Lawrence Bizzack was project manager for C. F. Replogle Company and Clarence Kirk, field engineer. Project engineer was Charles Hamann, under the Ashland division of the Ohio department of highways, W. R. Hauserman, division engineer. Everett S. Preston is Ohio's highway director.

## KEEPING TIRES IN SHAPE

(Continued from page 94)

ishment for a vulcanized section or reinforcement.

Likewise when tires have been used till the tread nonskid design is nearly gone at the center line, and if no serious damage has developed from cuts, a saving may be accomplished by having a retread applied.

The cost will be less than half that of a new tire and an opportunity to get nearly 100 percent more service will be gained.

Major retread and repair equip-

ment centers are now located in many cities so that convenient, speedy and reliable service of these types may be secured.

● *Summing Up.* The contractor is making money when he recognizes that he can save on his tire bills and eliminate vehicle delay by (1) knowing the right pressure to keep his tires in good shape, (2) seeing to it that that pressure is constantly maintained in his tires, and (3) looking after tires not in good overall shape by repairing and retreading. Profit lies not just in getting a job done, but also in doing it with the right kind of tires and tire care.

## Example of How Big the Stakes Are in Proper Tire Care

Even a small fleet of construction equipment involves the use of tires worth many thousands of dollars. And, keeping them in shape by reasonable care and attention, at slight cost, can result in huge decreases in annual tire expense.

Consider the following theoretical fleet and apply corresponding figures to your own situation.

Type Vehicle	No. of Vehicles	Tire Value	Est. Annual Turnover	Est. Tire Cost per Year
Tractor-Scrapers	6	\$ 45,000	35%	\$17,500
Lge. R. Dump Rock Wagons	6	30,000	80	24,000
Med. Size & Batch Trucks	10	9,000	50	4,500
Power Graders—Ind. Tract.	6	7,000	50	3,500
Loaders, Cranes, Rollers	10	10,000	35	3,500
Pickups & Autos	10	1,200	83	1,000
<b>TOTAL</b>		<b>\$102,200</b>		<b>\$54,000</b>

Reasonably possible reduction in annual tire cost is 20%. On above equipment, extra pocket money saved by good tire care would be \$10,800. In addition, getting 10% of out of service tires recapped and repaired for \$2,300 instead of buying new tires for \$5,400 would add \$3,200 to the savings.

Is \$14,000 out of estimated annual expense of \$54,000 worth saving? The answer can be nothing but "Certainly."



## 200 Papers Given at Research Board Meeting

More than a thousand of the highway technical men gathered in Washington, D.C., January 5-9, 1959, for the Highway Research Board's 38th annual meeting. During the week-long affair, many of the board's committees met, and more than 200 papers or panel discussions were presented at 41 different sessions.

Those who hold membership in the board have received the December and January issues of the organization's "Highway Research Abstracts," containing synopses of many of the papers. Selected papers will be issued as separate bulletins in coming months, and later in the year the annual proceedings will be published. Inquiry for data should be addressed to the Highway Research Board, 2101 Constitution Avenue, Washington 25, D.C.

The meeting sessions this year were marked by a continued broadening of the concept of research in the field of highways. Formerly the subjects were confined largely to physical engineering, this meeting



● Alan M. Voorhees—being given award by retiring HRB chairman C. H. Scholer.

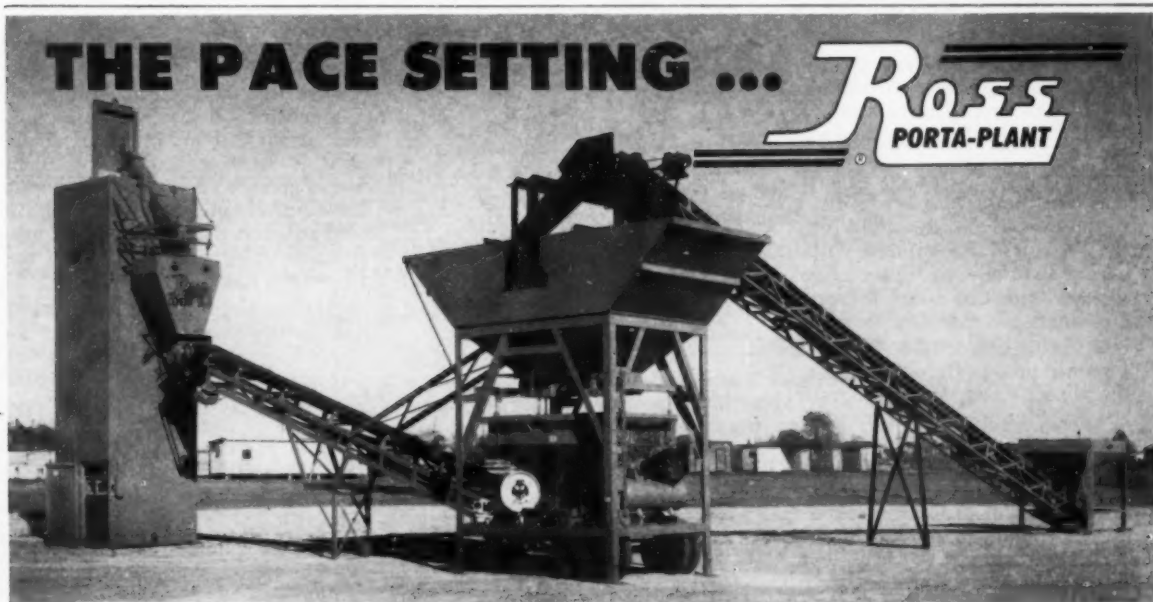
held daily sessions with a score or more of notable papers on traffic and urban planning, for example.

Harmer E. Davis, director, Institute of Transportation and Traffic Engineering, University of California, was selected as the board's chairman for 1959. He succeeds C. H. Scholer of Kansas State College.

Harver Davis also was given the

Roy W. Crum distinguished service award for 1959 for his many-sided achievements as an administrator and teacher in urban and highway transportation research.

Alan M. Voorhees, traffic planning engineer, Automotive Research Foundation, received the 1958 Highway Research Board Award for the best paper given at the previous annual meeting.



Model 30-3 Batching Plant, 220 bbl. Cement Silo and 65' 24" Belt Conveyor and 3 Yd. Feeder Hopper set up. This plant has capacity of 500 to 600 yards per day with the proper allied equipment. The bin sides fold for legal highway clearance and are simple and easy to erect at the jobsite.

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Told to AGC Contractors:

## Missile Base Jobs Challenge Contractors

*Runway paving contractors face new problems in growing program to rush launching platforms.*

Featured speakers at the AGC Miami Convention included a missile expert, several Congressmen, and national highway leaders.

There will be some road-building work on the moon within another 15 to 20 years, Dr. Wernher Von Braun, director of the Development Operations Division of the Army Ballistic Missile Agency, told the convention. The missile scientist predicted that concrete launching facilities would be the first thing built on the moon and that shortly thereafter some roadbuilding would be required.

The dramatic impetus of the Missile Era was brought home to the highway contractors, also, by General E. C. Itschner, chief of the U. S. Army Corps of Engineers. Roadbuilders who have eagerly sought the huge military airfield paving projects following World War II, will find the emphasis shifting from that type of construction to missile launching bases, the general pointed out. He described the nature of this shift in this way:

"I cannot predict the ultimate size of the missile construction program or the magnitude of the entire military construction task it projects. In view of budgetary considerations the volume of other types of military construction probably will diminish as missile construction gains momentum. Also it is likely that emphasis will increase on military construction within the United States and diminish overseas. It also appears that construction will be dispersed throughout the country rather than concentrated at existing military installations."

● **\$600 Million in Work.** The size of the upcoming missile construction program is impressive.

"The Air Force expects us to

place under contract about \$480 million for missile construction this year," General Itschner said. (Over 4 times last year's program.) In addition, the Corps will place another \$119,000,000 worth of missile contract construction for the Army.

The Army's 1959 program envisions the start of construction on about 18 to 22 Nike Hercules sites. At the same time, a construction program will get under way for facilities for a much newer missile, the Nike Zeus.

This will mean "a tremendous amount of construction . . . in the very near future," General Itschner pointed out.

Highway contractors who come into the missile construction program, as many of them may, will find the task a difficult one. Construction of the new bases must proceed concurrently with, or even in advance of final design of the missiles themselves. Thus, as the weapon is redesigned, design and construction of the bases must frequently, even repeatedly, be altered. The initial design contractors begin with will be only a prototype, rather than a final plan with specifications.

General Itschner cited as an example, a project on which over 70 modifications in design were necessary during the 30-day advertising period alone.

Contractors on missile projects are going to have to exercise patience and construction ingenuity "if we are to stay ahead of the enemy," he said.

Tolerances will necessitate construction techniques more exacting than any heretofore experienced, the General pointed out. Yet these tolerances must be met if the units are to be effective. To complicate such projects further, contractors

can expect that at the same time he is completing his work equipment contractors will be moving around on the job as well. Much of the equipment for the missile launching facility will have to be built on the construction site, thus introducing problems in scheduling and liaison which are bound to make the construction job more difficult.

Another military leader revealed

*(Continued on page 129)*

### Labor Reform Progress?

Several weeks ago, on the eve of the AGC Miami Beach convention, *Roads and Streets* published a list of principles which the AFL-CIO Building and Construction Trades Department had promised 12 months earlier it would adhere to. The 10-point program was designed to increase productivity and to eliminate labor abuses.

Has there been any visible adherence to these principles?

Frank J. Rooney, chairman of the AGC Labor Committee, gave this answer at the Miami Beach gathering:

"A survey on the effectiveness of this program made at the Midyear Board Meeting showed disappointing results. However, another survey of our Labor Committee made at this meeting indicates that in some areas where our contractors have actively pressed for recognition and adherence to the ten point program by labor unions, many of the objectives have been obtained.

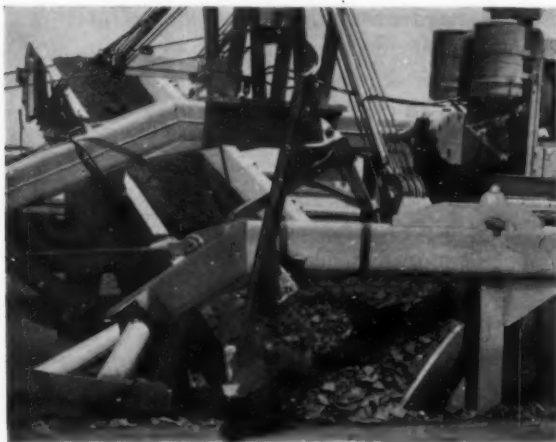
"The committee is of the opinion that contractors should exert every effort to get whatever good they can out of this program by actively and aggressively insisting upon the application of the 10 points by local labor organizations. We recognize that in many areas, resistance by the local unions has been extensive. If this cannot be overcome on the local level, we recommend that the international unions and the Building and Construction Trades Department be notified. In announcing this program, the department called upon this association for help in carrying out these principles. Let us not place ourselves in a position where labor can say they offered us the opportunity to improve conditions but we failed to take advantage of it."



This P&H EL Loader is used by J. E. Haddock, Ltd., Pasadena, California, for a cut and fill operation on the Harbor Freeway extension from Los Angeles to San Pedro, California.

## The **P&H** EL LOADER method does a better job, faster...for more "PROFIT·YDS."

Earth moving contractors using the P&H method of loading with the P&H EL Loader are loading dirt cheaper than any other method known. They are getting outstanding economy because the EL Loader provides unusual maneuverability for faster loading... because the positionable conveyor provides them with the versatility that permits loading any type of hauling unit... because one man, the tractor operator, handles all three operations... raising and lowering the cutting disc and conveyor assembly and operating the conveyor belt.



51" clearance is provided between the conveyor belt and plow beam, and a clearance of 36" between conveyor and main frame, when conveyor is at maximum loading height. This provides ample clearance to handle maximum volume of material.

Check these features that make the C-30A Model P&H EL Loader a profit-making investment for you:

1. One-man operation from bank to any hauling unit.
2. Stratified soils can be mixed and blended to a maximum depth of eight feet.
3. Troughing-type conveyor belt is 48" wide to provide maximum loading capacity.
4. Operator can raise conveyor to clear a height of 13 feet.
5. Loads 500-1200 cubic yards per hour—side casts 1000-2000 cubic yards per hour.
6. Easily and quickly dismantled and transported.

The versatility and ruggedness of the P&H EL Loader make it applicable for earth moving in any terrain where scraper loading can be done. Combining this with the most economical use of power, the P&H method of loading does a faster job, better and, at the same time, helps you to "Profit-Yards" every foot of the way.

For complete, accurate cost analysis on *your* job, write Dept. 522A, Harnischfeger Corporation, Construction & Mining Division, Milwaukee 46, Wisconsin.

### THE P&H LINE:

Truck Cranes 10 through 70-ton capacity  
Crawler Cranes 20 through 100-ton capacity  
Excavators ½ yd. through 3½ yds.  
Soil Stabilizers from 8 through 12-foot widths—  
compacted thicknesses from 7 through 12 inches.



## HARNISCHFEGER

Construction & Mining Division  
Milwaukee 46, Wisconsin

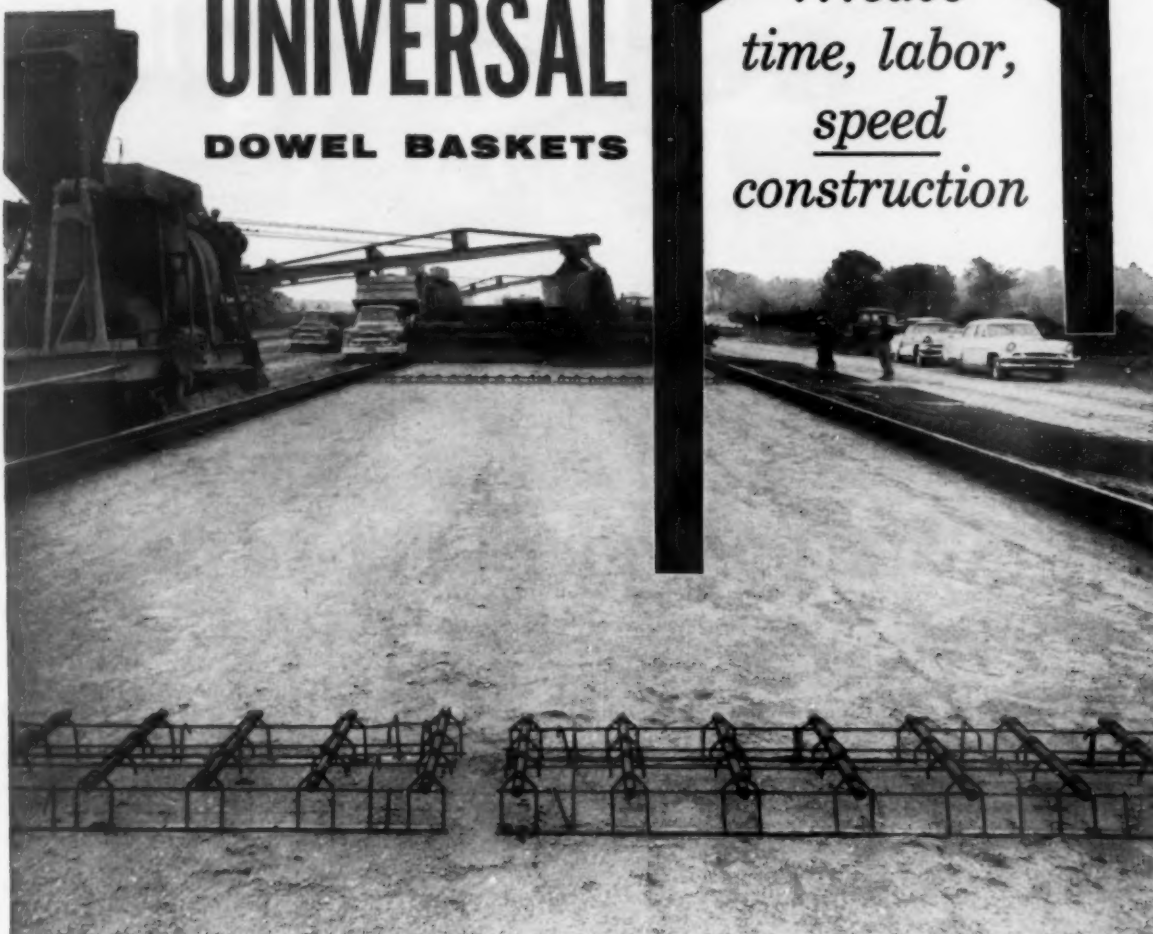
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# UNIVERSAL

## DOWEL BASKETS

...save  
time, labor,  
speed  
construction



DESIGNED TO MEET  
ANY  
SPECIFICATION



Highway contractors everywhere are using Universal Dowel Baskets because they are ready to use, easy to handle, accurately made, and are more economical, laid down on the job. These are heavy duty baskets . . . completely assembled, with the bar welded in position. They can't come apart, won't get out of alignment, and dowels are always held in parallel relationship. We have the experience to meet any specification and production facilities to take care of your requirements: Why not get full details today?

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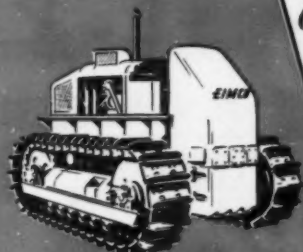
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# THE BIG

*Announces*  
**NEW MODEL DESIGNATION**

**FOR SPECIALIZED  
CRAWLER EQUIPMENT**



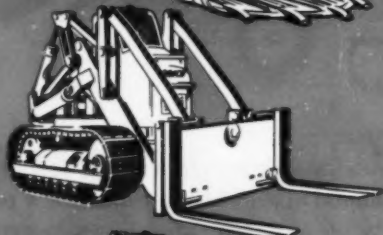
**EIMCO 105**

This is the basic **Tractor** available with **Dozer**, **Excavator** or **Excavator-Dozer** Attachments.



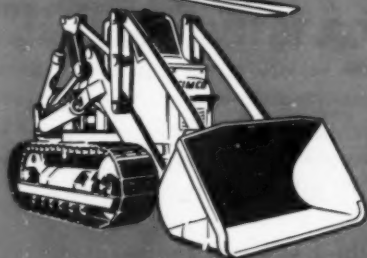
**EIMCO 115**

New number designation for Eimco's rugged **Steel Mill Excavator**. Extra-Strong, for use in slag pits and other steel mill areas.



**EIMCO 125**

This is model number for the **Front End Loader** and **Fork Lift** . . . fast, maneuverable, strong.



**EIMCO 135**

Specify this number for Eimco's **Steel Mill Front End Loader** . . . specially engineered and proven in use in steel mills throughout the world!



Every Eimco Crawler Unit gives you greater maneuverability, greater production and work-output, greater economy . . . engineered for service to your industry to save you time and maintenance costs.

Write for facts and qualified engineering assistance on Eimco . . . the **MODERN** Equipment.

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Want lowest cost per ton?

buy **Cedarapids**  
BUILT BY  
IOWA

# Stabilized Base Mixer Produces **700 TONS PER HOUR** for Oklahoma Interstate Rt. 35



## STABILIZING AGENT ATTACHMENTS MEET MIX SPECIFICATIONS



With this versatile unit, you can mix a controlled amount of water with the aggregate, or add calcium chloride, Portland Cement or emulsified asphalt, as specified. Cedarapids feeders provide precise metering of these materials into the mixer.

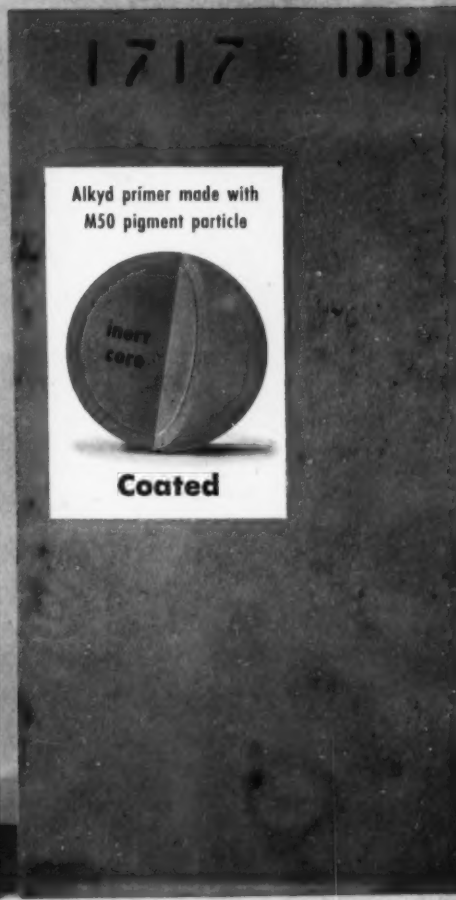
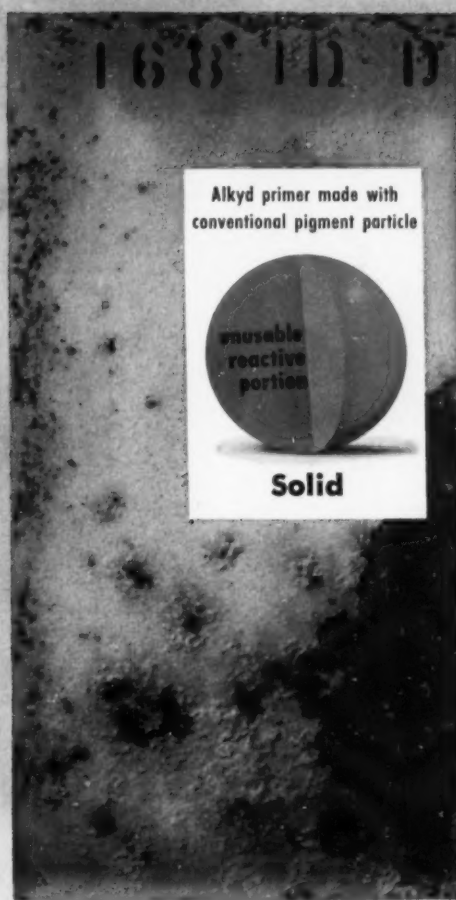
That's a production record for plant-mixed stabilization material in Oklahoma! Specifications called for a particularly high quality of mix, too. But Amis Construction Company's Cedarapids Twin-Shaft Stabilized Base Mixer blended three sizes of aggregate, mixed it thoroughly with a precisely controlled amount of water, and produced over 700 tons of stabilized aggregate base per hour! In other States, Cedarapids Stabilized Base Mixers are producing as high as 860 tph as a measured minimum!

Production like this is one of the many Cedarapids benefits that assure lowest cost per ton. In the Stabilized Base Mixer, and *every* plant or component in the complete Cedarapids Line, engineering emphasis is placed on high production, the ability to meet strict specifications, and low-cost operation. It adds up to more profit on each ton you produce!

Bulletin SBM-1 gives complete engineering details of the two sizes of Cedarapids Stabilized Base Mixers. Send for your copy today.

**IOWA MANUFACTURING COMPANY**  
Cedar Rapids, Iowa, U. S. A.

Never before  
such durable  
metal  
protection



## **Proof M50 pigment Defense in Depth paints deliver up to 300% greater content of rust-inhibitive ingredient**

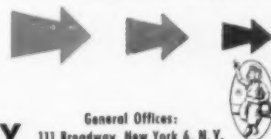
Exposure tests make it plain! Paints containing M50\* basic lead silico chromate pigment do more to prevent rust. Look at the panels above. These primers were applied (2.0 mils, dry) over rust and mill scale (to intensify severity of the tests), then exposed 12 months at Perth Amboy, N. J. in an industrial atmosphere and 12 months at Sayville, L. I. in a normal atmosphere at 45° South. Clearly, the rust arresting action of M50 pigment is significant.

Research analysis of tests like this prove an M50 pigment Defense in Depth paint provides substantially more rust-inhibitive action than comparable paints made with conventional pigments. You can see one reason for this. The configuration of the M50 pigment particle provides a more efficient way to take advantage of the well-known rust-inhibitive properties of the active ingredients (fused lead chromate).

Second reason for the improved anti-corrosive action of M50 Defense in Depth paint

systems is the versatility of the M50 pigment. Unlike other rust inhibitors, the inert-core particle is technically desirable and economically practical for use in intermediates and finishes . . . not just in primers alone. Each coat in an M50 pigment system can be given substantial rust-inhibitive properties in its own right. Hence total rust-inhibitive pigment content of some M50 pigment systems exceeds the rust-inhibitive content of comparable non-M50 pigment systems by as much as 300%.

See on the next page other ways M50 pigment Defense in Depth paints step up metal protection. See also how National Lead is prepared to help you get these superior specification products from your regular paint suppliers.



Painted with M50  
Defense in Depth paints

\*Registered trademark of

**National Lead Company**

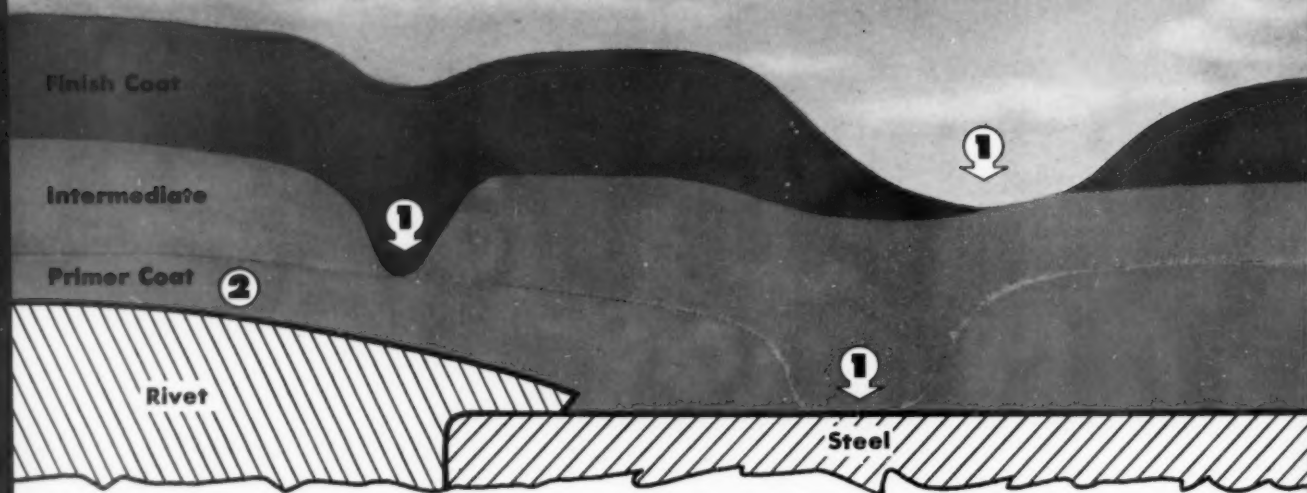
General Offices:  
111 Broadway, New York 6, N. Y.



For more facts, turn page

**1** "Holidays" in any coat of M50 pigment systems are less harmful . . . all coats provide both rust inhibition and weather resistance.

**2** With M50 pigment Defense in Depth paints, thin deposit areas such as rivet heads, have more protection . . . paints "wet" pits and hollows, too.



## Schematic section through 3-coat M50 pigment Defense in Depth system shows new paints provide two performance extras

Information on the preceding page proves that M50\* pigment Defense in Depth paints deliver inherent rust inhibition well beyond that available in other anti-corrosive paint systems.

Diagram above shows two additional performance extras. Because M50 pigment coats give more protection over thin deposit areas . . . because breaks in M50 pigment coats traceable to damage or painting mishaps are less harmful . . . the need for on-the-job spot priming and touch-up is greatly reduced. Then, too, M50 pigment primer coats are not only rust inhibitive but also weather resistant. Re-priming is rarely needed.

Other advantages of M50 pigment paints include a broad choice of colors in all coats, with excellent tint retention.

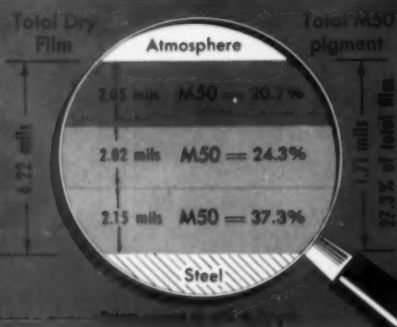
### Are you responsible for steel structure maintenance?

If so, you are invited to examine exposure tests of M50 pigment paints at National Lead's Sayville, L. I. test station. National Lead will also:— (1) send you a 24-page descriptive brochure, "Defense in Depth." (Mail coupon below); (2) provide technical aid in test applications; (3) help you develop suitable specifications for paints containing M50 pigment.

For M50 pigment paints themselves, contact your regular suppliers.

\*National Lead Company trademark for a basic lead silico chromate pigment

## Why M50 Defense in Depth paints give you metal protection beyond all former concepts



In every coat . . . rust inhibition! Fused lead chromate is noted for rust-inhibition. The M50 pigment particle structure permits paint makers to include large proportions of lead chromate in all coats of anti-corrosive systems.



**2 M50 pigment alkyd primer coats**  
Exposed 9 yrs 45°S  
Each coat 1.5 mils dry film

**M50 pigment finish**  
put on rusty steel  
Exposed 4 yrs 45°S  
in industrial atmosphere



3.0 mils  
1.5 mils

Name your own tint



In every coat . . . weather resistance! M50 pigment is insoluble in water and has the excellent tint retention properties of fused lead chromate. Unlike other rust inhibitors, it actually boosts weather resistance of paints.

In every coat . . . your choice of colors! M50 pigment gets along well with most tinting pigments, permits paint makers a wide range of colors . . . not only in intermediates and finishes but in primer coats as well. Colors stay true.



**M50  
Defense  
in  
Depth**

**National Lead Company,**  
111 Broadway, New York 6, N. Y.

Gentlemen: Please send me your 24-page brochure, "Defense in Depth." Include color card of the six M50 pigment paints you recommend for steel highway structures.



Name \_\_\_\_\_ Title \_\_\_\_\_  
Firm or Dept. \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

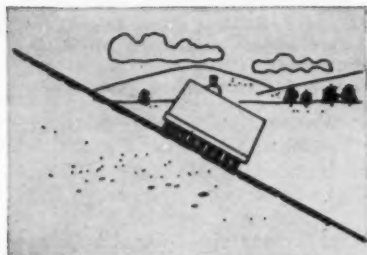




# Let's outlaw tipping

tipping may be all right  
in a restaurant . . .  
or to a red cap but . . .

tipping is a too frequent operator hazard  
when you're compacting shoulders. Get a couple  
of outside wheels in space above a ditch and  
over goes the roller — and the man.  
Banish that danger!



The Seaman-Andwall 5620 Pneumatic Compactor is ultra-safe. Its low silhouette and extra width (92") provide an unusually low center of gravity. It has actually worked day in, day out on slopes as steep as 2 to 1 as illustrated above, without the slightest tendency to tip.



The 5620 is usually maneuverable; turns a full 180° on an 18 foot road. Operator sits sideways to direction of travel, can see his work even in close quarters.

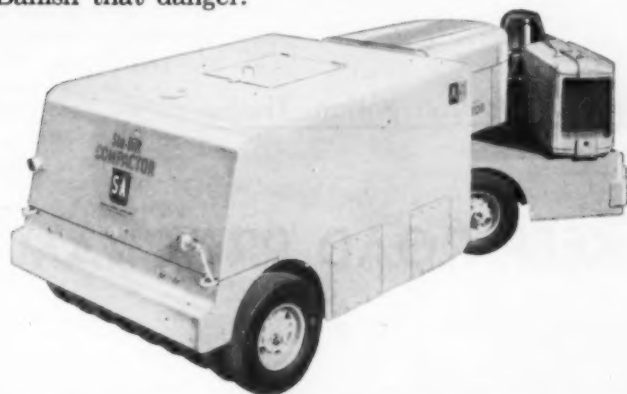
Weight ranges from 7 tons empty to 20 tons with ballast.



Send for this illustrated literature with complete specifications on the 5620 Seaman-Andwall Pneumatic Compactor. Just a postcard will bring it promptly.



7040



**Here's how.** The SEAMAN-ANDWALL 5620 Pneumatic Compactor provides super-safety with an extraordinarily low center of gravity. It has actually worked successfully on a 2 to 1 side-slope (levee construction near Jackson, Mississippi). *No holding cables to a bracing tractor at the top.* The 5620 didn't even slip.

Apart from the safety factor the SEAMAN-ANDWALL 5620 Pneumatic does the job faster with its extra wide rolling width of 92 inches.

And the "straight down" pressure principle provided by front wheel drive eliminates surface shear, scuffing or displacement of materials.



So for operator safety and for faster, lower cost compaction on the level, on steep grades or slopes — this season get yourself the 5620 SEAMAN-ANDWALL 7-20 ton Compactor.

## SEAMAN-ANDWALL CORPORATION

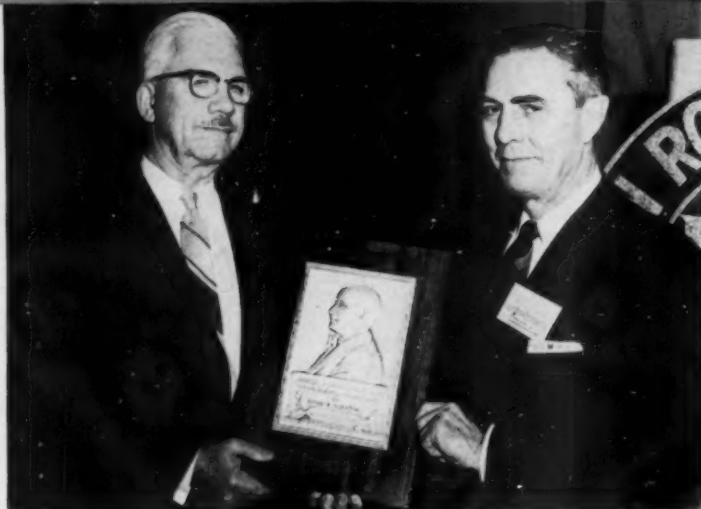
A subsidiary of American-Marietta Company

Elm Grove 11, Wisconsin

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● Nello L. Teer, Jr., ARBA president-elect.



● Rex M. Whitton, chief engineer, Missouri state highway commission and past-president of both ARBA and AASHO, is shown (right) receiving the coveted Bartlett Award plaque, presented by B. D. Tallamy, Federal Highway Administrator. Given this year at the ARBA meeting, this annual award is for outstanding contribution to highway progress.

### ARBA's Dallas Convention: Theme:

## KEEP ROAD PROGRAM ON SCHEDULE!

*Convention was sounding board for ideas of top Congressional committeemen, on how best to step up federal road financing after 1960.*

Interstate Highway System, while maintaining a balanced program on the Federal-aid ABC programs, held the spotlight at the American Road Builders' Association's 57th annual convention at Dallas, January 19-22.

ARBA took a formal stand on the issue in a resolution stating that it will "work diligently" to keep the National Highway Program moving on schedule. The resolution also offered a "sound and workable plan" to keep the program moving, in five steps:

1. Revise authorization as needed to reflect revised cost estimates and to provide increased authorizations for the primary and secondary systems and their urban extensions, in order to maintain a reasonable balance with the authorizations for the Interstate System.

2. Suspend the Byrd Amendment to permit bond financing of the Highway Trust Fund.

3. Suspend the termination date of the Highway Trust Fund.

4. As an interim solution, provide immediate means to finance the anticipated deficits in the Trust Fund, 1960 through 1963.

5. Using the 1961 economic study as a basis, provide adequate revenue to support the Highway Trust Fund to the conclusion of this program.

● *Gen. Prentiss Reports.* The convention took this action after Maj. Gen. Louis W. Prentiss (USA, Ret.) had presented an analysis of the situation, with regard to the Highway Trust Fund.

General Prentiss pointed out that the total income to the Trust Fund through 1972 will be inadequate to finance the program by about \$12.6 billion. He also noted that the Secretary of Commerce was directed by the Federal-Aid Highway Act of 1956, as amended, to

make a study and investigation. The purpose is to make available to Congress information by which it may determine what federal taxes should be imposed, and in what amounts, in order to assure an equitable distribution of the tax burden.

When this study is in hand, General Prentiss observed, Con-



● E. B. Cape, Texas Bitulithic Co., heads ARBA's Contractors' Division.



## Nello L. Teer, Jr., New ARBA President

Nello L. Teer, Jr., president of Nello L. Teer Co., Durham, N.C., succeeds Julian R. Steelman of Koehring Company, Milwaukee, as president of American Road Builders' Association. Teer is a former president of ARBA's contractors division. He has been active in national affairs, in addition to heading a roadbuilding firm which has widespread operations in the Southeast and in Latin America.

**Vice-Presidents of ARBA** elected for 1959 are: J. E. McCracken, Bethlehem Steel Co.; Harold L. Plummer, chairman, Wisconsin highway commission; and W. A. Bugge, director, Washington department of highways.

**Treasurer:** J. N. Robertson, highway director, District of Columbia.

**New Directors:** (1962) Kenneth Lindsay, executive vice-president, Iowa Manufacturing Co.; E. W. Bauman, director, National Slag Association; Wm. F. Morgan, of New York City; O. J. Porter, of Porter, Urquhart, McCreary & O'Brien, consulting engineers, Newark, N.J.; James W. Spencer, Cor-

nell University, Ithaca, N.Y.; and John O. Morton, comm., New Hampshire state highway department.

**Contractors' Division of ARBA:** president-elect is E. B. Cape, president, Gulf Bitulithic Co., Houston, Texas, succeeding Ralph Kramer, of Plain, Wisconsin. Vice-president is James E. Lambert, of White River Junction, Vermont.

**Educational Division:** Emmett H. Karrer, Ohio State University, Columbus, Ohio; president.

**Materials and Services Division:** David H. Henderson, Armco Drainage & Metal Products, Inc., Middletown, Ohio; president.

**Engineering Division:** George D. Mills, of Reynolds, Smith and Hills, consulting engineers, Jacksonville, Fla.; president.

**Municipal and Airport Division:** George A. Carter, director of public works, Baltimore, Md.; president.

**County and Local Roads Division:** L. B. Duff, director, Allegheny County, department of public works, Pittsburgh, Pa.; president.

gress will be in a better position to establish a long-range financing plan for the Highway Trust Fund. Since revenue from this plan would not begin to come into the Trust Fund before fiscal 1963, General Prentiss stated that some interim plan of financing must be established in order to carry the program forward through the intervening years. He outlined such a plan, calling for some borrowing from the general fund or through bonds.

● **Tallamy Concurs.** Some of these sentiments were echoed by Federal Highway Administrator B. D. Tallamy when he addressed the convention.

"We must have a long-range financing program," Mr. Tallamy said, "but we don't have the information on which such a program can be based." He said that Congress will be in a better position to set up such a program when it has the results of (1) the economic study of the benefits of the Interstate System, and (2) the AASHO Road Test.

Mr. Tallamy reported that the Interstate Program was "7% ahead of schedule for the period July 1,

1956-December 31, 1958." Praising the \$400 million emergency ABC program of 1958, he said that "we've demonstrated again that if we ever need a quick stimulus to the economy to overcome a business recession, one way to do it is through construction work, through the normal channels of private enterprise."

● **Congressional Forum.** The legislative forum, with two Senators and two Representatives participating in an informal discussion, was one of the most informative such sessions in recent convention history.

In the preliminary statements:

● **Sen. Dennis Chavez (D-N.M.),** chairman of the Senate Public Works Committee, related the Interstate program to the defense program, pointing out the need for highways and bridges capable of carrying heavy military loads and adequate for the evacuation of cities in case of emergency.

● **Sen. Francis Case (R-S.D.),** ranking minority member of the Senate Public Works Committee, reviewed the financial problem, discussed several proposed solu-

tions, and observed that the problem will probably be complicated in the near future by demands from Alaska and Hawaii for grants of Federal 90-10 money.

● **Rep. George H. Fallon (D-Md.),** ranking majority member of the House Public Works Committee and chairman of the Subcommittee on Roads, devoted his time to a strong defense of the new needs formula, stating that the requirements of the Interstate System could be met in no other way.

● **Rep. William C. Cramer (R-Fla.),** took a stand on several issues, notably by his advocacy of bond financing, as opposed to an increase in the Federal gas tax, and his insistence that the question of reimbursing the States for highways incorporated into the Interstate System not be permitted to delay the completion of the System.

● **A fifth Congressional speaker** was Sen. Jennings Randolph (D-W. Va.), newly appointed member of the Senate Public Works Committee and past treasurer of ARBA. Senator Randolph in a luncheon talk stressed highways and schools as important to the democratic way of life.

● **Resolutions.** In addition to the resolution on highway financing, ARBA adopted some 19 other resolutions dealing with a wide variety of subjects including highway design and specifications, airport construction, labor practices, and cooperative procedures with other organizations in the highway field.

Retiring President Julien R. Steelman, completing a two-year period of service at the head of the organization, reported substantial growth in ARBA membership and  
(Continued on page 118)



● **G. A. Gilbertson, president-elect of CIMA.**

# ANNOUNCING TWO NEW LIMAS



## TYPE 64

1¼ Yd. Shovel  
40 Ton Crane  
13'3" Long Crawlers  
10'8" Wide Crawlers  
With 30" Treads

## TYPE 64-SC

SPECIAL CRANE  
50 Ton Capacity  
17'½" Long Crawlers  
14'0" Wide Crawlers  
With 42" Treads

- Easily converts in field for use as shovel, crane, dragline, clamshell or pullshovel
- Crawler, truck or wagon mounting available
- Choice of gas or diesel power—with torque converter
- Lima's precision air control lets operator work all day without tiring

*Newest Lima, Type 64—shown here with 22-ft. boom, 18-ft. handle, 1¼-yd. dipper.*

The rugged new Lima Type 64 fills a definite need for a heavy duty 1¼-yd. shovel, 40-ton crane, dragline and 1¼-yd. pullshovel that will combine dependable high performance with low maintenance costs, for maximum profit! The new type 64-SC with extra long, wide crawlers is designed for special crane service. This new Lima has a capacity of 50 tons on a 40' boom at 10' radius.

### Lima Quality Features

You get these, and many more, Lima quality features in the 64 and 64-SC: precision-machined teeth on heat-treated alloy steel gears; long-lasting, trouble-free anti-friction roller bearings; safe, sure band brake and jaw clutch power steer-

ing; splined shafting; extra-large-diameter hoist, crowd swing and propel clutches; independent planetary boom hoist.

Crawler truck base is strong one-piece alloy steel casting with integral machined ring gear and flame-hardened roller path. Rotating base is one-piece carbon steel casting, built to absorb severest shocks of hard digging. Center pin is relieved of strain by six hook-type conical rollers tapered to revolve naturally around double-flanged roller path.

Like all Limas, the 64 and 64-SC are good travelers. Strips down easily for haulage. Side frame assemblies, complete with treads, are simple to remove. Ledge mounted, one-piece rear counterweight can be easily removed. When equipped

for crane service, folding or telescoping gantries can be lowered to cab height for low clearance.

### Designed to Outperform

Service is easy, every part readily accessible. Simplicity of power transmission design lessens friction, reduces upkeep, and delivers more power. Torque converter prevents engine stall, cushions shocks to operator and machine, increases performance by building up line pull.

Learn more about the Type 64 and 64-SC, newest members of the Lima family of high-performance construction equipment—The Lima line includes shovels to 6 cu. yd., cranes to 110 tons, draglines variable. Write or see your Lima distributor now.

... for more details circle 291 on enclosed return postal card

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

**LIMA** Construction Equipment Division, Lima, Ohio  
**BALDWIN · LIMA · HAMILTON**

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment







Stationary Lima Austin-Western Crushing and Screening Plant produces high tonnage of accurately sized specification material. Five 20-yd., 2-compartment bins facilitate truck loading.

## Lima Austin-Westerns crush, screen...boost output, reduce material costs!

Lima Austin-Western, engineered and quality built to meet your exact needs for accurately sized specification material at low cost. A complete line of portable and stationary crushing and screening plants, setting new high standards for high level production and low maintenance in pit or quarry service.

Line includes jaw and roll crushers in many sizes, matching screens, elevators, conveyors and bins. Apron or reciprocating feeders control material flow, eliminate overloading, choking and surging. Centralized power plants, anti-friction bearings and fewer shafts, belts and gears keep operating costs low.

Get full information now on high output, low cost Lima Austin-Western Crushing and Screening Plants. See your nearest distributor or write us.



Apron type portable feeder shown with a 2540 primary portable plant.



101-SE crushing and screening plant—typical of portable units designed for fast moves and easy setups to reduce haul costs.

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**LIMA AUSTIN-WESTERN** Crushing, Screening and Washing Equipment  
**BALDWIN · LIMA · HAMILTON**  
CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO





## LIMA Roadpacker speeds highway and airport construction across the nation

The LIMA Roadpacker is a big favorite with prominent contractors throughout the country for highway and airport construction. It has no equal for fast, uniform consolidation by the vibratory method of single course macadam bases, gravel subbases and soil-cement bases.

The Roadpacker is equipped with six 420-lb. hydraulically driven shoes for effective vibrating and tamping action. These oscillate approximately  $\frac{1}{4}$  in. at the proper frequency for best consolidation of any base material. The force is applied vertically

to prevent shoving the material being consolidated. The sole plate is designed for both forward and backward operation.

Working widths—easily varied by upfolding one or both of the end shoes—range from 8 ft., 9 in., with four shoes, to 13 ft., 1 in., with six shoes. The shoes are raised and lowered hydraulically.

Get the full story on the LIMA Roadpacker today. See your nearby distributor, or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

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DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

**LIMA** Construction Equipment Division, Lima, Ohio  
**BALDWIN · LIMA · HAMILTON**

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment



5920

UNION ASPHALT MATERIALS CO. Inc., Ostrander, Ohio

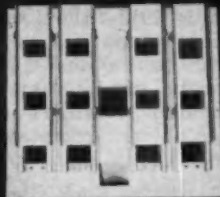
# ***SELECTS*** THE BIG MADSEN MODEL 481 6000-lb. ASPHALT PLANT



1



2



3



**...for FAST PRODUCTION**

**...for EASY, LOW-COST MAINTENANCE**

What do you look for in an asphalt plant? Union Asphalt Materials Co., Inc., Ostrander, Ohio wanted the clean operation, oversize construction, maintenance economy, and the fast production and big tonnage output of the MADSEN Model 481. The MADSEN 6000-lb. plant shown above gives this successful contractor these MADSEN advantages...advantages that can pay-off in greater owner profits for years to come. Three of the outstanding MADSEN features which help provide these advantages are shown at the left.

- ① **Fast air-cylinder operation** — through conveniently located control console. Levers electrically energize solenoid-operated air valves for faster control of bin gates, weigh-box, mixing, asphalt injection, asphalt charging and dumping to truck.
- ② **Oversize MADSEN Twin-Shaft Pug Mill Mixer** — for the ultimate in fast, thorough mixing. Curved bottom and center liners are externally removed and installed ... an easy 20-minute job per liner section for one man *without getting on the inside of mixer.*
- ③ **Triple discharge bin gates** — for livelier, more efficient bin action. Aggregates are withdrawn from each bin compartment through 3 openings. This MADSEN feature (patent pending) eliminates "coring out" and segregation — results in more uniform filling of the weigh-box.

For complete details on the MADSEN Model 481 Asphalt Plant—See your MADSEN Distributor or write MADSEN WORKS, P.O. Box 38, La Mirada, California or Baldwin-Lima-Hamilton Corporation, Lima, Ohio.



*Equipment that Serves.*

COMPLETE PARTS STOCK AVAILABLE  
IN LOS ANGELES AND LIMA, OHIO

**MADSEN WORKS**

Construction Equipment Division  
**BALDWIN-LIMA-HAMILTON**

LA MIRADA, CALIFORNIA



ASPHALT PLANTS • PUG MILL MIXERS • AGGREGATE DRYERS • DUST COLLECTOR UNITS • ROAD PUG TRAVEL MIX PLANTS • WEIGH BATCHERS • DUST WASHERS • FEED BUNKERS  
FEED TUNNELS • ASPHALT TANKS • ASPHALT AND FUEL PUMP UNITS • CONCRETE FLOAT FINISHING MACHINES FOR AIRPORTS AND HIGHWAYS • ROYAL CROWN PUMP VALVES

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Exclusive Austin-Western all-wheel drive puts power in front wheels for powerful pulling assist in this rough grading operation.

Pennsylvania contractor says:

## "A happy operator brings more profit!" A-W hydraulic controls reduce fatigue

Lucian M. Davidson, Davidson Bros. Contractors, Harrisburg, Pa., tells us his big 6-wheel drive and steer Austin-Western helps an operator do more work, more easily, than with any other grader.

### Front wheels powered

He says, "All-wheel drive gives constant speed without spinning wheels when we place ballast on paving jobs." There's no dead weight to push around on an A-W. Front wheels deliver pulling power to handle the roughest jobs fast.

"Operators have no difficulty maneuvering close to obstacles, buildings and corners with the A-W's all-wheel steering," he adds.

"The Austin-Western torque converter helps reduce operator fatigue. Excellent visibility from the cab facilitates precision performance. Any operator can handle this machine with ease after a short briefing."

### Controls you can feel

"Hydraulic controls react instantly to

fingertip touch, yet give you the feel of the machine. Struggle with out-of-date mechanical controls is a thing of the past. That's important, because a contented operator means more profit!"

4 and 6-wheel models available. Gas or diesel power, torque converter optional. See your nearby A-W distributor or write us. Learn today why profit-minded contractors choose Austin-Westerns to boost profits with high performance and low maintenance.



Big 6-wheel A-W demonstrates easy maneuverability in tight quarters for rough or finish grading.

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Power graders • Motor sweepers • Road rollers • Hydraulic cranes

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## ARBA Convention

(Continued from page 113)

activities, before turning over the leadership of the Association to the incoming president, Nello L. Teer, Jr., of the Nello L. Teer Co. of Durham, N. C.

The Fifth annual Highway Materials and Services Exhibit, held in conjunction with the convention, attracted good crowds throughout the meeting.

Other outstanding speakers at the general sessions were Ellis L. Armstrong, Commissioner of Public Roads, Washington, D.C.; Maj. Gen. Walter K. Wilson, Jr., Deputy Chief of Engineers for Construction, Washington, D.C.; E. H. Blaschke, Project Engineer, Brown & Root, Inc., Houston, Texas; James T. McBroom, Chief, Branch of River Basin Studies, Fish and Wildlife Service, U. S. Department of Interior, Washington, D.C., and George M. Williams, Assistant Commissioner, Bureau of Public Roads, Washington, D.C.

● **Urban Route Planning.** A challenge to state highway departments to assume the leading role in planning and financing highways in urban areas was voiced by Rex M. Whitton, chief engineer of the Missouri state highway commission.

Whitton was one of a panel on highway planning and financing in metropolitan areas. He urged highway officials to maintain strong public relations programs. "A continuing and progressive public relations program of information will promote understanding and install confidence between individuals, communities and areas and the highway department," he said.

But Whitton made it clear that a state highway department could not content itself with an advisory role. The state's responsibility was defined in the 1916 Federal-Aid Highway Act, Whitton said, as "one of initiative, cooperation and construction action" and "it has not been fundamentally changed through each succeeding Federal-aid highway act."

● **Lower Bridge Costs.** Less costly steel bridges can result from increased standardization of details in design. This was said to ARBA delegates at Dallas by James M. Straub, vice-president of Fort Pitt Bridge Works, Pittsburgh, Pa., and vice-president of the American Institute of Steel Construction.

Straub urged wider adoption of recommendations on design stand-





ards made by federal, state and county highway groups.

More widespread use of established computer methods and available computer equipment was urged by H. A. Radzikowski. Moderator of a panel conference, this speaker noted that 375,000 new highway structures are needed. A saving of only one percent in their design and construction would mean \$320 million.

The Bureau of Public Roads presently has available 69 computer programs for "high-speeding" computations for bridge members, dimensions, elevations and other details of design. Use of the new methods will bring bridges to the contract stage months earlier than by former methods.

● **Many Technical Topics.** The ARBA convention meeting sessions included papers or panel discussions on many diverse subjects: cement treated base, bituminous methods, tar stabilization, sodium chloride use, lime stabilization, prestressed and precast concrete bridge techniques, photogrammetric developments, roadside maintenance, legislation, financing and planning, and other topics.

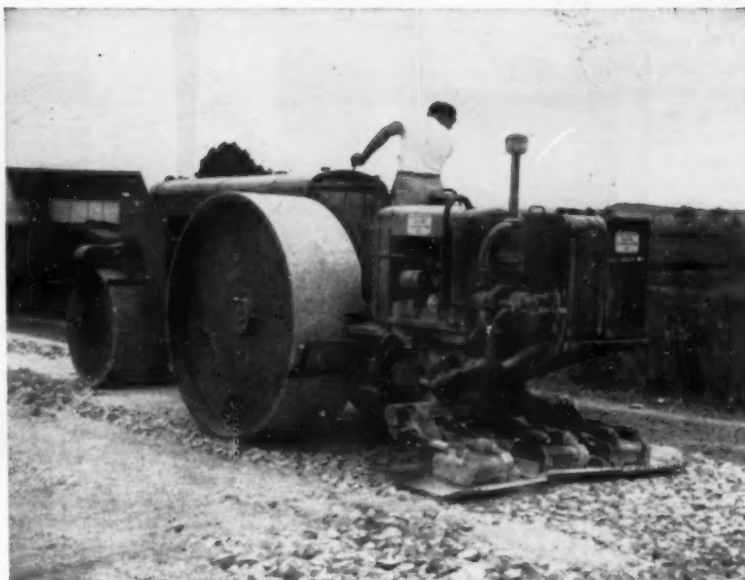
### G. A. Gilbertson is CIMA President

G. A. (Gerry) Gilbertson, president of The Frank G. Hough Co., was elected president of the Construction Industry Manufacturers Association at their annual meeting, held in Dallas, concurrently with the ARBA convention.

First vice-president of CIMA for 1959 is Donald V. Bittenheim, Bittenheim Publishing Co., New York; 2nd vice-president, W. C. Messenger, vice-president, Chain Belt Company, Milwaukee, Wis.; treasurer, Ray McLean, president, Jaeger Machine Company, Columbus, Ohio.

Directors—(3-year term): A. G. Crockett, Mack Trucks, Inc.; R. L. LeTourneau, R. G. LeTourneau, Inc.; A. J. Lichtinger, The Wellman Engineering Co.; J. A. Miller, Rosco Manufacturing Co.; J. E. Mitchell, The Firestone Tire & Rubber Co.; W. A. Nugent, Thor Power Tool Co.; Buel M. Wallis, Schield Bantam Co.

The Construction Industry Manufacturers Association (CIMA), with headquarters in Chicago, represents 243 companies who furnish equipment, materials, components, supplies and publications to the construction industry.



Austin-Western Roller-Compactor combines static and vibratory force to work fines into stone base aggregates.

## Austin-Western Roller-Compactors let you lay fewer courses—cut costs!

Austin-Western Roller Compactors do a deeper, faster consolidating job. They combine the advantages of both vibratory and static compaction, assuring maximum density of all types of material and profitable operation.

### Vibrates up, rolls down

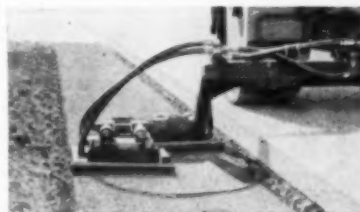
For vibratory compaction, three 450-lb. shoes are attached to a basic 3-wheel roller. Each shoe, hydraulically operated, vibrates approximately 2200 times per minute. This motion extends to the bottom of the lift and then reacts upward, thereby keying low-level material for maximum consolidation in the fewest number of passes. At the same time, the roller unit applies static pressure so as to effectively seal the surface.

There is more profit to be made with an Austin-Western Roller-Compactor. It operates at speeds up to 1 mph. Fewer passes are required because of its efficient double action. Fewer courses are required. It compacts lifts of stabilized material up to 12 in. in successive passes . . . no more need to

remove previous courses if final tests reveal insufficient density.

### Designed for rugged service

Maintenance requirements are low. Vibratory units are sealed in oil, completely protected from dirt . . . designed for dependability under rugged service conditions. Available now for Austin-Western and most all other makes of 3-wheel rollers. Get full information today on the cost cutting Austin-Western Roller-Compactor. See your nearby A-W distributor or write to us.



Vibratory widener attachment—for use with any 3-wheel roller equipped with A-W Roller-Compactor unit . . . may be mounted left or right.

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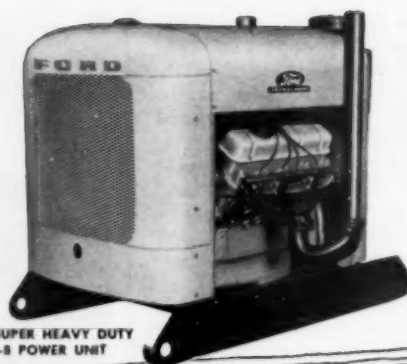
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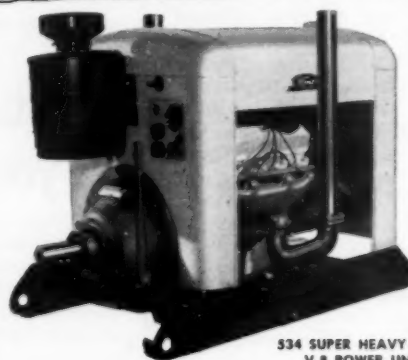


401 SUPER HEAVY DUTY  
V-8 POWER UNIT

## Announcing...the addition of four new FORD Heavy Duty Power Units!



477 SUPER HEAVY DUTY  
V-8 POWER UNIT



534 SUPER HEAVY DUTY  
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Now . . . all Ford Industrial Engines  
are available as engine assemblies  
or power units!

● These four new power units are built to handle your toughest work dependably and at low cost. Now from 134 to 534 cubic inches, there's a Ford power unit *right* for your job. The Super Heavy Duty V-8's, for example, offer many advances like fully machined combustion chambers, new fuel and lubrication systems, and more horsepower per pound of engine weight than ever before. Ford power units and engine assemblies are available with SAE housings, HD power take-offs, and 5- and 8-speed transmissions. The 3 Super Heavy Duty V-8's can be equipped with a new 6-speed Transmatic Drive. And for fast parts delivery or on-the-job repairs, remember, there's always a Ford Dealer nearby to give the service you need *when* you need it.



320 DIESEL 4-CYL.  
POWER UNIT



134 4-CYL.  
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272 V-8 POWER UNIT



332 V-8 POWER UNIT

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Much Needed New

## INSPECTION METHODS FOR WELDED HIGHWAY BRIDGES

*Committee report is designed to supplement latest specifications of the highway agencies and provide much-needed guidance for field inspectors. It stresses inspection objectives rather than ability of the inspector to perform actual welding.*

**By La Motte Grover**  
Air Reduction Sales Company

A manual or bulletin on Inspection of Welded Highway Bridges has been completed by the Highway Research Board's Committee D-6, Metals and Welding. This review describes briefly its scope, contents and intended use. Several items of the bulletin merit a somewhat detailed explanation because of their special importance or because they evoked discussion during the preparation of the bulletin.

The bulletin is based, in general, upon the Standard Specifications for Welded Highway and Railway Bridges of the American Welding Society, which are written by a committee composed largely of state highway and railway bridge engineers, with a few members from the steel fabricating and welding industries and the Bureau of Public Roads. Committee D-6 is composed quite largely of representatives of state highway departments who

have developed an extensive background of experience in welded bridge construction. There are some members from the fabricating and welding industries and the Bureau of Public Roads. Thus, this inspection bulletin, as well as the specifications which it is intended to supplement, have been prepared largely by bridge engineers familiar with welding.

The bridge specifications of the American Welding Society have been found adequate for use as specifications and they have been adopted by AASHO and many of the state highway departments with little, if any, modifications. However, a need has been expressed by many of the states for an inspection-guide to supplement these specifications—to amplify somewhat and explain some parts of the specifications which might not be understood fully, especially by an inspector who is not thoroughly experienced in welding.

The H.R.B. bulletin has been prepared to meet this demand, which has been increasing with the rapid increase of the use of arc welded bridge construction. The

committee believes that it will greatly facilitate the training of inspectors for both shop and field welding. Perhaps the greatest need for such guidance has arisen in the field during erection. On many bridge projects, especially on smaller ones, the amount of field welding is not sufficient to warrant the providing of a special welding inspector. The bridge inspector must be provided with information that will enable him to carry out the welding inspection intelligently, along with his other duties.

● *Hazy Clauses Supplanted* in the early days of welded construction, the standard specifications for welded bridges did not contain as comprehensive provisions for materials, welding procedures and other requirements for workmanship as they do now. In some instances an attempt was made to compensate for this deficiency by inserting hazy and meaningless clauses in the specifications, which only bewildered the inspector, and put him much more "on his own" to make decisions than is now the case.

Under these circumstances it was often felt that to do an adequate job of welding inspection, a man should possess a good deal of welding skill himself. It has now become well recognized that the determining of welding procedures and sequences is an engineering function and one that cannot properly be delegated to the welders and welding operators, nor to an inspector, unless he understands the engineering principles involved. Therefore, it is more important for the inspector to be provided with guidance such as he can get from the H.R.B. bulletin on welding inspection, than to receive training in the technique and manipulation involved in actual welding.

One of the important functions of the forthcoming Bulletin is to acquaint the inspector with the most important objectives of welding inspection. With adequate knowledge of these objectives, he will be able to discriminate between minor imperfections of comparatively small importance and really important matters or defects that detract substantially from the quality of the finished structure and which might jeopardize its behavior in subsequent service. He will be guided so as not to impose arbitrary requirements which may be unnecessary and may even do

Given as a report on Committee D-6, Metals and Welding, of the Highway Research Board, at the Board's annual meeting, January 2-6, 1959.



more harm than good in some cases. He will thus strengthen his position when insisting that important requirements be met.

● *Scope of Bulletin.* The bulletin contains a glossary of standard welding terms and definitions for ready reference. Also included is a legend of the standard symbols for indicating sizes and types of welds on drawings and conveying certain information about welding procedures to be used, as well as illustrations of the use of the symbols on drawings.

The various duties of a welding inspector are outlined along with the step-by-step routine to be followed in verifying the qualifications of welding procedures and of the welders or welding operators and the proposed welding procedures, and inspecting for proper preparation and fitting of parts to be welded, as well as inspection of welding operations and of completed welds.

A chapter is included to clarify the proper interpretation of drawings and specifications for welded construction, largely for the benefit of an inexperienced inspector.

To give the inspector a basis for exercising sound judgment, the objectives of welding procedures are discussed in detail along with the basis for determining any features of welding procedures which may have to be worked out on the job. Some such features may have to be established by qualification tests, in cases where they do not conform strictly to the provisions of the standard prequalified welding procedures of the AWS bridge specifications.

The chapter on welding procedures includes information on various types of arc welding electrodes, requirements for preheating and other general information based upon the AWS bridge specifications. A sufficient amount of elementary information on the metallurgical aspects of welding is included, to provide a good appreciation of the objectives of welding procedure.

In another chapter methods and devices for fitting, for shop assembly and for erection are discussed, with illustrations of typical applications. Although the contractor is responsible for the choice of such methods and devices and their adequacy (as in any kind of construction) the inspector should be satisfied that the proposed methods are capable of providing good

### Highlights of Welding Committee Report

- Standard Specifications of the American Welding Society, now adopted by AASHTO and many states, will, if properly applied result in safe, efficient structures.
- The big need today is for rapid development of more inspectors to handle the growing volume of bridge projects which involve field welding.
- The inspector's job isn't just to develop skill to do welding but to understand the principles involved, and know how to determine whether a job is being done properly.
- His job however does entail verification of the welder's qualification and of the procedures to be used.
- The bulletin will help develop judgment in handling special problems, overcoming defects in welding results, and more systematically applying the methods found to be essential to good workmanship.

workmanship and correct shape and alignment. Of course, methods of fitting and assembly for welded construction are likely to be quite different from those used in riveted or bolted construction, because in welded work there are usually no holes for assembly or erection pins and bolts.

Other topics covered in the bulletin are: welding sequences, control and correction of distortion, defects in arc welds, how to avoid them and how to correct them; also safety and protective equipment. A short bibliography is also included for the guidance of someone who wishes to make a more intensive study of some particular phase of welded steel construction.

● *Welding Sequences.* The choosing of the sequences in which various welds are to be made in a welded bridge is, for the most part, a comparatively simple matter. Most of the steel fabricators and erectors who bid on welded construction now have a sufficient background of experience to assume the responsibility for such matters. The AWS bridge specifications contain a number of clauses that cover the matter of welding sequences in a general way. The H.R.B. inspection bulletin will give an inexperienced inspector the kind of background information that he may need in determining whether the sequences proposed or being used by the contractor fulfill the general requirements of the specifications.

There are two, and only two, practical objectives to be met in

choosing a welding sequence:

- (1) to avoid objectionable distortion and
- (2) to prevent shrinkage cracking.

There have been many misguided attempts to arrange welding sequences so as "to minimize residual stresses." The reasoning involved is usually fallacious, as has been proved by research.

Occasionally, there are specific cases that are somewhat more complex and, therefore, may merit special consideration in advance of the beginning of actual fabrication or erection operations. If the sequence of welding, in such cases, is not covered by the plans and specifications, or if the contractor proposes any departure from such provisions, a definite understanding of the matter should be reached in advance. It might well be defined by a written welding sequence, illustrated by sketches, which is approved by the inspector. Occasionally, there may be differences of opinions that may have to be ironed out.

One such case is the sequence for welding the groove welds in the flanges and web at a splice in a beam or girder. Long experience has led the AWS bridge committee to feel that in the case of rolled steel beams (with the possible exception of the largest or deepest wide flange sections) the most suitable and practicable sequence is to weld the web splice first and then weld the flange splices. Accordingly, they have written into the AWS bridge specifications that this sequence should be followed unless



otherwise approved by the engineer.

Experience has shown that for comparatively deep plate girders, especially those with rather thin webs, this sequence must be modified to prevent buckling distortion in the web. However, modifications should not be carried to such an extreme that they might cause a possible tendency for shrinkage cracks to develop in the web as a result of the restraint of too much advance welding in the flange splice grooves. A crack in a web can propagate into an adjacent flange. In the HRB. inspection bulletin, the sequence of welding in beam splices is discussed in detail and at considerable length.

Discussions that occurred on this subject in the H.R.B. Committee D-6 during the preparation of the inspection bulletin disclosed that quite a wide variety of welding sequences had been used successfully in recent years for making butt welded splices in beams and girders. These ranged all the way from welding the web completely in advance of starting the welding of the flanges, as described in the AWS bridge specifications, to the opposite extreme of completing the welding of the flanges in advance of starting the welding in the web splice. Therefore, the sequence under most circumstances cannot be such a very critical matter, although it may have been so in the early days of welding when electrodes, welding equipment and procedures had not advanced to

their more recent stage of improvement.

Another example of the importance of following a proper welding sequence is described in detail in the bulletin. This is the case of long lines of continuous stringers which necessarily involve a number of field splices in each line. When one is aware of the fact that the shrinkage which occurs in a welded joint, particularly a groove-welded joint, is quite appreciable under ordinary conditions, it is a simple matter to work out a suitable welding sequence. The sequence of making the splices and the end-connections of stringers to the floor beams is arranged to permit unrestrained shrinkage insofar as practicable and to avoid an accumulation of such shrinkage effects over several panels of stringers, which might cause serious distortion such as bowing of floor beams or even buckling of the tension chords of a truss.

● *Distortion Control and Correction.* Control of distortion starts in the design and drafting department where it is important to avoid the providing of greater amounts of welding and larger sizes of fillet welds than required by the allowable working stresses and other specification requirements. Also, parts should be detailed to provide balanced weld shrinkage effects as much as practicable, and to facilitate the use of suitable welding sequences.

In controlling distortion during

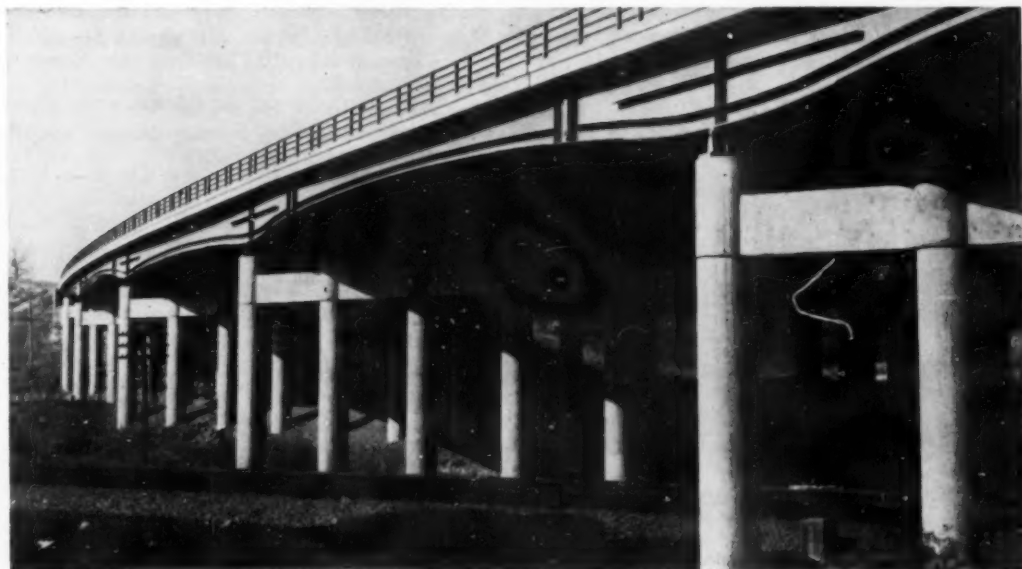
fabrication and erection, it is especially important to extend the control over all operations of preparation of material, assembling or erecting parts and fitting them properly for welding, as well as the welding operations themselves. This is to make sure that parts are held fair and in correct alignment and position and that joints are not fitted so wide that excessive amounts of welding will be required to join them together. Of course, the following of a proper welding sequence and procedure is important too, from the viewpoint of distortion control.

Occasionally, some corrective measures for distortion must be applied, perhaps because the construction procedures and sequences have not been planned exactly right or controlled rigorously—or it may have been impracticable to detail the welding so as to provide perfectly balanced shrinkage effects; for example, in the case of floor expansion devices. Occasionally, rolling mill stresses may be released by the heat of welding or by other fabricating operations, thus causing a lack of balance and some accompanying distortion.

Heating by means of the oxyacetylene flame is commonly used to correct distortion. Sometimes a jacking force is used in conjunction with the heating, or advantage may be taken of the weight of a member, itself, in producing forces to provide corrective deformations. Often the heating of small local

(Continued on page 128)

● All welded steel construction has come along rapidly, resulting in clean structural lines such as seen here in this highway grade separation on the New York State Thruway near Herkimer.





## Rubber-tired dozer plugs \$10 per hour profit leak

The problem was sand. 3,400,000 yds of blow sand, playing its usual havoc with crawler tracks. Particularly with push-dozer tracks. Contractors, rebuilding a federal highway in Indiana, found their 320 hp pusher, working this rough material, needed a track repair job *every 700 hours*. Cost, \$7,000! Or \$10 an hour—over and above normal operating costs.

When need arose for a second pusher, contractors got ready to shell out another \$10 an hour.

### Solution — rubber

"Before we do," said the project supt and a 29-year veteran

in the business, "let's look at the latest rubber-tired dozers. Sand shouldn't be nearly as hard on rubber as it is on steel tracks."

"Agreed," management answered, "But any rubber-shod rig we buy *must* do as good a pushing job as our 320 hp crawler!"

One machine did. A 375 hp Michigan Model 380 Dozer brought in by the Clark distributor. Contractors bought it!

### 15 pay yds: 20 to 80 seconds

From that day on, the Michigan and the big crawler



High dozing speeds let the one Michigan do work of two crawlers, spreading fill.

Fast backup, power-shifted at flick of small lever, saves deadhead time between push cycles.





Maintenance costs went way down when Michigan Dozer went to work on this highway relocation.

together handled push-loading of a fleet of seven 25-yd scrapers. Performance of the two pushers was very much the same. Per-scraper load time, either loading unit, varied from 20 to 80 seconds (depending upon the soil). Scraper loads, with either crawler or Michigan, measured 15-plus pay yds. Output, per pusher, with scrapers on one mile haul, ran about 2,150 pay yds per 8-hour day.

#### Speed provides bonus

Why was the contractor so pleased? Well, he eliminated \$10 an hour in track maintenance, at no decrease in push-loading efficiency. He also got a bonus in speed. One day, for instance, the Michigan alone spread all fill... a job which normally took two 191 hp crawler dozers. Another time, when the pushers had to work two different borrow areas in one day, the 25 mph Michigan reached the second site so quickly it got in half an hour's work while the crawler was still creeping along the road shoulder. And the firm expects to use the Michigan on still other applications on other jobs. Says the supt, "This unit sure is *not* just a special-purpose sand machine. It can do as good a job as a crawler—or a better one—on about 70% of what some people call "big crawler" applications. Mud, not as good maybe. But sand, clay, dirt—excellent!"

See for yourself. Write our sales department, in Benton Harbor for data. Or call your nearest Michigan Distributor for a demonstration.



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## Veteran operator analyzes the new Michigan Dozer

(The writer used to be the contractor's boss scraper operator—the man who paced the fleet, helped decide which section of the borrow should be cut, etc. He tested the Michigan, now operates it. Here's what he says...)

"What's the difference between a crawler and a Michigan pusher? Well, first of all, you get an entirely different view of things from the Michigan. You sit higher. You look down on the scraper operator. You can see his signal or signal him without looking up, over or around a pile of dirt. You can see the load coming into the bowl and your blade contacting the scraper pushblock.

"Sticking with the pushblock is easier, too. If the scraper starts to drift to one side, all you do is turn your steering wheel slightly. No need to lock a track or skid and slide around. Or if the scraper starts to bog down, the Michigan's torque converter automatically gives you less speed (and more power) without foot-clutching or shifting gears. If the scraper starts to run away, you automatically get more speed (and less power). So you and the scraper work together from one end of the cut to the other.

"With the Michigan, you normally can push faster than with a crawler, thus get better load boiling and tighter fuller packing. I normally push at speeds up to 6½ mph (second gear). Sometimes, in tough going, I power shift down to low by moving a lever the way you do on an automatic transmission car. (No clutching.) Then, I work at about 3 mph. On easy pushing, I move up to third gear (13 mph). I back up at 13 mph too.

"Here's another trick I've learned. After pushing a pan through the cut—especially if the swath is rough and bumpy—I down-pressure the blade to ground level, and power-shift into reverse. The blade chops off all high points, makes the ground smooth again. It means better travel for the next pan you push through! And more production!"

## *Operator training a problem?*



## **LOOK HOW MICHIGAN SCRAPERS LICKED IT FOR THIS N. J. CONTRACTOR**

Take a look at the operators on Sallcon Incorporated's scrapers. You're liable to see a new man every week or two. The reason is the high cost of labor. Handling mostly small contracts, this Somerville (New Jersey) firm frequently finds it most economical to lay off men between jobs—then rehire when they go onto a new site. "In half a month's

time," explains Jim Seibert, company president, "we may be forced to use two or more different operators per machine."



High travel speeds reduce waste time on jobs like this 48 acre, 150 home development in Middlesex County, N. J.



## Clutching—none

"Under these conditions, it's naturally important to us that scrapers be as easy to operate and as easy to take care of as possible," continues Mr. Seibert. "We looked at them all . . . and decided on 10½ yard Model 110 Michigans. *Their power steer, power shift, and torque converters take the effort out of moving dirt!* New operators become pretty proficient after only a few cycles. Nobody wears away clutches, because there is no foot clutch. Gear selection is no longer critical; torque converter drive automatically balances speed and load.

"Michigan's hydraulic system is simple to master, also. The power train is easy to get at. What's more, based on our experience of last season, I feel Michigan 110's will prove extremely dependable over their entire working life."

## Output—160 pay yds hourly on 500 ft cycles

Production has been very good! On a typical housing development job, cutting roadways, each Michigan averaged 20 loads per 50-minute hour. One-way hauls were approximately 250 ft. Loading, with 85 hp pusher, took 40 to 45 seconds. Payloads in clay averaged 8 bank yards.



Positive ejection spreads load in seconds. Michigan controls are all-hydraulic; are actuated by easy-to-reach short-throw levers.

Power steer, no-clutch power shift-torque converter drive, good visibility help ease operator training.



A typical Michigan payload: 8 bank yards of clay. Pusher is an 85 hp crawler. Load time: under 45 seconds.

On tougher jobs—cutting railroad sidings and excavating industrial basements, for example—the 162 hp Michigans frequently are teamed with a 140 hp pusher (which cuts load time to 25 to 30 seconds).

## Self-loads satisfactorily

Occasionally they work alone, self-loading close to their 8 yd struck capacity.

In tight-quarter assignments—like grading between houses and building driveways—their power steer and short turn radius speed cycles.

The machines drive everywhere under their own power. Speeds up to 31½ mph.

## Check Michigan Scraper advantages on your job

Mobility, versatility, output—and ease of operation like this—we think, can help you too. For proof, we'd like to show you, first-hand, what Michigan Scrapers can do on the only job you really care about—*your own!* Let us bring a demonstrator to your work area. Let your own operators run it. Measure output. Compare performance. Then pick the size you need! Three models available, 10½, 19, 29 yds heaped.

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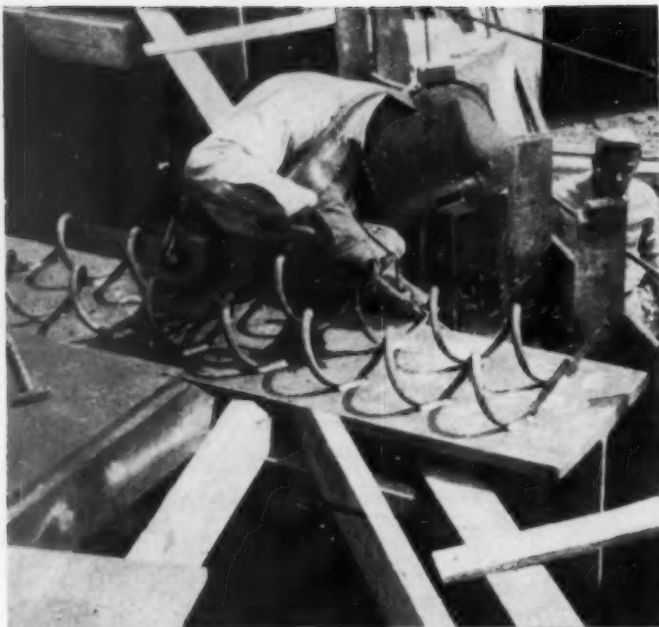
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● Will the shear connectors hold and function as the designer intended? Inspectors today have better means of checking. Bridge carrying Route NY 94 over stream in Orange County, New York.

*Editor's Note:* The Welder's helmet does not represent best safety practice, which calls for a seamless headgear which will allow no stray light to the welder's eyes.

## INSPECTION MANUAL

(Continued from page 123)

areas to comparatively low temperatures is used to produce slight local upsetting under the restraint of adjacent cooler portions, thus creating corrective deformations.

When these operations are performed under suitable control, they are not objectionable. The bulletin outlines the proper use of such corrective methods.

● *Defects in Arc Welds.* Quite a large chapter of the H.R.B. bulletin is devoted to the description and illustration of defects in arc welds, how to avoid defects and how to correct them if they should occur. Although the AWS bridge specifications cover this subject adequately from the viewpoint of enforcement of provisions for good workmanship, an inexperienced inspector needs the kind of explanatory information that is given in the bulletin.

Also, the appearance of properly made welds is illustrated, including the appearance of root passes and intermediate layers of multiple pass welds.

This chapter is based largely upon an especially lucid and comprehensive memorandum on the subject which was published by the British Welding Research Association several years ago.

● *Safety and Protective Equipment.* The chapter on safety and protective equipment is quite short. It is intended mainly to make the inspector "safety conscious" and focus his attention upon some of the aspects of safety which are rather peculiar to welded construction.

It is recommended that inspectors on welded construction be provided with more comprehensive booklets or publications on safety in welding and cutting. Some of the manufacturers of welding and cutting supplies and equipment have prepared such booklets for distribution. They are usually composed of quite a comprehensive set of simply stated rules which are easily understood by workmen. These rules are usually based upon standard provisions for safety as found in recognized codes or standards.

For a very comprehensive and more formal treatment of safety in welding and cutting the reader can refer directly to such publications as the following:

1. "Safety in Welding and Cutting" ASA Standard No. Z49.1-1958 of the American Standards Association, which is published by the American Welding Society.

2. "Recommended Safe Practices for Inert Gas Metal Arc Welding", Publication A.6.1-58 of the American Welding Society.

3. "Safe Practices for the Installation and Operation of Oxyacetylene Welding and Cutting Equipment",

published by the International Acetylene Association.

● *Methods of Inspection.* In any kind of construction work, regardless of the materials used and the methods employed, engineers have always wished that they might be provided with some non-destructive practice method of final inspection or examination which would provide irrefutable documentary evidence of an acceptable degree of quality and soundness. Such a method has never been available for any kind of construction work. Even if available, it would not be adequate because in any kind of work, an ounce of prevention is still worth a pound of cure, although corrections may sometimes be made more easily by welding than in other kinds of construction.

Radiographic inspection has been used to some extent by bridge engineers for at least a spot-checking of some of the most important groove welds (butt welds) in welded bridges. At the Highway Research Board's 37th Annual Meeting, (Jan. 1958) an excellent paper on "Radiographic Inspection of Welded Highway Bridges" was presented by John L. Beaton of the California Division of Highways, a member of Committee D-6.

One very important statement in that paper was: "Radiography or any other form of non-destructive testing, while a useful tool to the

bridge engineer and inspector, is nevertheless not the cure-all. It cannot be substituted for competent visual inspection, only used to supplement such inspection."

Experience in welded fabrication and construction has always shown one of the most important causes of defective welding to be lack of proper preparation and fit-up of parts at welded joints. Therefore, inspection of such preparation and fit-up is very important, whether it be done by the fabricator's inspector or the owner's inspector.

Where it can be assured that only thoroughly competent fabricators and erectors are involved employing adequate supervision over welded construction, a reasonable amount of visual inspection and engineering control should be sufficient, without the need for any kind of non-destructive testing. As Mr. Beaton pointed out in his paper, radiographic inspection has been found to be useful.

The bridge specifications of the American Welding Society provide that if specified by information furnished to bidders, important, highly stressed groove welds subject to tension shall be examined radiographically. The welds to be examined and the extent of examination of each weld are to be designated.

No specific radiographic procedures, techniques and standards of acceptance are described in the

AWS Specifications, because no standards have been developed which are recognized as entirely appropriate for bridge work. Reference is made in a footnote to Section VIII, Paragraph UW51 of the ASME Boiler Code as an example of commercial practice (for want of something better in the way of a reference.) This Paragraph UW51 and especially its standards of acceptance have not been found to be entirely suitable for welded bridge construction.

A study is now being made by the AWS bridge specifications committee, to cover complete provisions with respect to radiographic inspection, for use when it is desired to apply this method to welded bridge construction. One or two of the state highway departments have been studying also the application of ultrasonic methods of weld examination.

As the AWS bridge committee develops and adopts standard procedures and techniques and standards for acceptance for radiographic examination or for any other non-destructive method of examination or testing, Committee D-6 of the Highway Research Board expects to prepare and issue such supplements to its inspection bulletin as may be necessary to guide welding inspectors in the use of these methods.

● *Qualification of Welders and Operators.* One of the important

duties of a welding inspector has been to verify the qualification or competency of the welders and welding operators who are to perform the welding. The standards of the American Welding Society for such qualification are now being reviewed by a committee and they will no doubt be changed at least somewhat in the near future. Therefore, only general guidance in administering such qualification tests is covered by the H.R.B. bulletin at this time.

An important development in this regard is the recognition that a proper system of qualification for welding must separate the features of technique or machine operation, for which the welder or operator is responsible, from the features which are essentially matters of welding procedure and, therefore, associated with engineering control rather than manual dexterity.

A matter that has caused much concern is a needless duplication of the qualification of welders by various state highway departments, when the same contractor or fabricator and his welding personnel are executing work for more than one state. It is hoped that the American Welding Society through one of its committees will be successful in setting up an acceptable system of nation-wide registration of properly qualified and accredited weld-

*(Continued on page 181)*

## MISSILE BASE JOBS

*(Continued from page 104)*

some of the tremendous construction costs involved in the missile program. General A. M. Minton, director of installations for the U. S. Air Force, aid the national defense effort could ruin the United States as effectively as an atomic attack if some economy isn't practiced.

"A modern B-52 runway costs more than a complete World War II base. Yet we can buy several B-52 bases for the price of a single intercontinental ballistic missile base, he pointed out.

FLACK EQUIPMENT CO., Dayton, Ohio, has been appointed a Hydrocrane distributor for Bucyrus-Erie Co., South Milwaukee, Wis. The new distributor will offer sales and service on 5 and 12-ton capacity, truck-mounted, all-hydraulic Hydrocranes and  $\frac{3}{4}$  and  $\frac{1}{2}$ -yd. Hydrohoes and Hydroshovels.

## Road Program Still Growing, But—

Bertram D. Tallamy, Federal Highway Administrator, told the contractor convention that the engineering profession has now reached the end of the "tooling-up" period and that the state highway departments are now in actual production on a pace which can be maintained. While not minimizing the financial problem facing the federal-aid interstate program, he predicted that Congress "will come to grips very soon" with this problem.

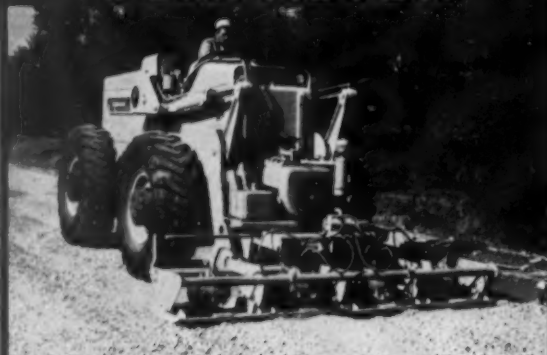
Congressman George H. Fallon, Chairman of the House Subcommittee on Roads, announced that he would begin hearings immediately to consider legislation to eliminate the shortage of funds now threatening to curtail the program in the future.

"I am confident that the ways and means will be found," Congressman Fallon said. "It will be a tragic thing if they are not. Tragic for the states which will find a great highway program abruptly curtailed. Tragic for the highway industry which has tooled up to meet the demands of a greatly expanded program. Tragic, in fact, for the whole economy of the United States, which reacted favorably when given a shot in the arm last year by the acceleration of the highway construction program and which is depending more and more on highway transportation."



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**GALION VIBRATORY COMPACTOR** develops specified densities in all granular soils. Four 30-in. shoes have individual electric motor power. Each delivers 3,600 to 4,200 three-ton blows per minute. Compaction width is 10-ft. Individual shoes can be removed for manual operation.

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**SUPERIOR-HOUGH SIDE BOOM** does not interfere with bucket use. Has complete hydraulic control and power — lifts 10,000-lbs. at 4-ft. overhang, more than a ton at 14-ft. overhang. Boom telescopes from 10 to 16-ft. maximum. Cable drum has free-spooling safety release.

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## FOUR-IN-ONE



**DROTT "4-IN-1" BUCKET** — Patented, multi-purpose all-hydraulic controlled bucket enables a "PAY-LOADER" to perform shovel, clamshell, scraper and bulldozer work — jobs that usually require several special machines — without losing a minute's time to make equipment changes.

## LEAF LOADER



**RAM LOADER** is equipped with individual hydraulic motors to operate reel and each of three conveyor belts. City reports it picks up 90% of bulk and saves as much as 30% of leaf loading costs. Also has valuable secondary use in fringe snow areas as a loader.

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**ROADS AND STREETS, March, 1959**



# you this **VERSATILITY**

## SPREADER



**RAM BLACK TOP SPREADER** handles hot or cold mix for patching or paving. Unit has separate power and all-hydraulic controls — rides on own pneumatic tires. Lays up to 8-ft. widths, adjustable from 0 to 48-in. Thickness also adjusts 0 to 6-in. Hopper capacity — 2 cu. yd.

## BACK HOE



**WAIN-ROY BACK HOE** — This finest of back hoe attachments, with all-hydraulic controls, has a 12-ft. digging depth and a working radius of 190° for both digging and dumping at right angles. Cuts vertical sides, square corners, level grades — digs bell holes, trenches, pits.

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## SNOW PLOW



**RAM ROTARY PLOW** — Separate power unit drives blower to load trucks or cast to either side. Double or triple augers available. **FORK LIFT** easily interchanges with bucket. Adjustable spacing fits various sizes of loose or pallet loads. Powerful hydraulic controls handle heavy loads.

## FORK LIFT



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**Ready-Mix plant owner says**  
**"I Looked at Other Loaders . . .**  
**but I Liked Tractomotive best"**

When it comes to buying equipment, careful consideration is given to its purchase by E. C. Voit & Sons, Inc., owner of a Ready-Mix concrete plant in Madison, Wis.

"I looked at other loaders," said Mr. Voit, "but I liked this 2-yd TL-20 TRACTOLOADER\* best." He added that he also likes the Tractomotive dealer — "our relations have been mighty happy over the years."

A good product backed by a good dealer — that's the combination Tractomotive offers you—no matter where you are located. Allis-Chalmers construction machinery

dealers throughout the world handle Tractomotive loaders and other Tractomotive products exclusively.

Like Mr. Voit, why not see what a modern TRACTOLOADER will do before you decide. On the TL-20 and TL-16, the exclusive *one-lever* control of speed and direction alone will add many extra yards to your daily production. See your nearby Allis-Chalmers dealer soon . . . he has a full line of TRACTOLOADERS to show you — two- and four-wheel drive.

\*TRACTOLOADER is a registered Tractomotive trademark.

ALL TRACTOMOTIVE EQUIPMENT IS SOLD AND SERVICED BY YOUR ALLIS-CHALMERS DEALER

**TRACTO—**  
 a sure sign  
 of modern design

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**TRACTOMOTIVE**

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# This stencil tells you 6 important facts about your concrete pipe



- Permanence—welded wire fabric insures durability
- Low cost
- Easy handling and placing
- No maintenance—this is permanent concrete pipe
- Improved structural stability—this pipe won't crack or crumble
- Fireproofness—with no need for special pipe lining

**Welded wire fabric reinforcement** gives you all these extras. And for the best reinforcement, be sure it's USS American Welded Wire Fabric. USS American Welded Wire Fabric is precision manufactured from extra-strong cold-drawn steel wires. And its quality is rigidly controlled to assure you a fabric that meets every specification—exactly—shipment after shipment.

**A type for every pipe**—USS American Welded Wire Fabric is made in circumferential wire sizes up to and including  $\frac{1}{2}$ " at 2", 3", and 4" on centers. For more information, write to American Steel & Wire, 614 Superior Ave., N.W., Cleveland 13, Ohio.

*USS and American are registered trademarks*



• **USS American Welded Wire Fabric** is used all over the world for sanitary and storm sewers, highway and railroad culverts, and for airport drainage.

It pays... to ask, ***"is it Reinforced"***

**American Steel & Wire  
Division of**



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Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors • United States Steel Export Company, Distributors Abroad

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**INTERCHANGE NEARING COMPLETION.** Note the efficient short haul of materials from batching plant, set up inside one circle of the clover-

leaf. Note variations in pavement width, flaring from 12' to 17' slab. Curves were super-elevated to maximum 16" in 16'.

## NEW TYPE JAEGER SPREADER SAVES \$400 TO \$450 A DAY ON U. S. 30 INTERCHANGE

*Hydraulic self-widening and diagonal screed solve problems of placing flared and super-elevated slab*

On this interchange of U. S. 30 East and State Route 1, near Mansfield, Ohio, V. N. Holderman Paving, Inc. set up for a daily production of 500 paver batches of 1.38 cu. yds.

But, because slab width varied from 12' to 17' and curves were super-elevated to 16" in 16', it took 10 hour shifts to place this production, even with two finishing machines and a large crew.

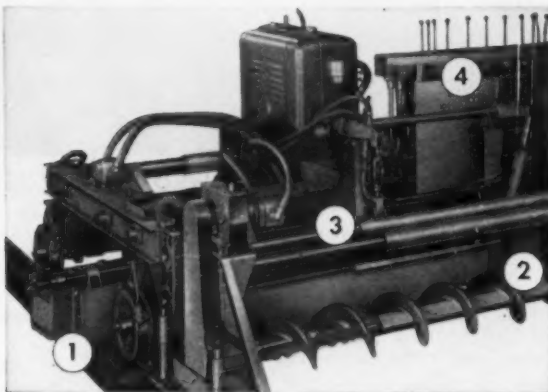
**SPREADER SAVES 2 HOURS:** Introducing a new Jaeger JSX all-hydraulic self-widening spreader immediately behind the paver solved both problems. Width changes from 12' to 17' were made with the touch of a lever. On the super-elevated curves, concrete was easily spread up-hill by the Jaeger helical screw and the diagonally adjustable oscillating screed which makes a precision strike-off and also insures solid compaction against





the higher form. As a result, Holderman met the 500 batch schedule in 8 hours instead of 10, saving two hours (\$400 to \$450) daily overtime. They also saved 4 to 6 shovelers previously needed for carryback.

**OFTEN SAVES SECOND FINISHER:** On any work where specifications permit, use of the JSX spreader, with its accurate 12" oscillating screed, also eliminates the need for a second finishing machine.



#### 12'-18' JAEGER ALL-HYDRAULIC SELF-WIDENING SPREADER

**1: ADJUSTABLE STRIKE-OFF, PLUS 12" OSCILLATING METERING SCREED** DIAGONALLY ADJUSTABLE to lay up-hill on pitched and super-elevated slab.

**2: INDEPENDENT RIGHT-AND-LEFT SPREADING SCREWS** positively remix, spread, densify. No other spreader has them.

**3: 6' OF INFINITE WIDTH ADJUSTABILITY** by hydraulic power, operating telescopic frame and spreading screws. Simple screw flights and screed extensions with infinitely adjustable screed end-shoes.

**4: EVERY FUNCTION HYDRAULICALLY POWERED** and lever controlled — no mechanical transmissions.

Make money with a Jaeger JSX (diagonal screed) or JSH (transverse screed) spreader on your work. Ask your Jaeger distributor or send for Catalog JSP9.

#### THE JAEGER MACHINE COMPANY 223 Dublin Avenue, Columbus 16, Ohio

Jaeger Machine Company of Canada, Ltd., St. Thomas, Ontario

**BELOW:** Jaeger Type JSX spreading base course with dual screws. Adjustable plate makes rough strike-off for reinforcing mesh. On second pass, spreader lays top course, strikes it off, then makes precision metering strike-off with its oscillating 12" screed. Hydraulic power swings the screed to any angle needed to work material up-hill on pitched or super-elevated slab — eliminating carry-back.



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**ROADS AND STREETS, March, 1959**



THE MEN WHO MAKE UP AED'S 1959 EXECUTIVE COMMITTEE

*P. D. Hermann, executive secretary; R. F. Newlin, Newlin Machinery Corp., Kansas City, Kans., vice-president; J. A. Benson, Benson Tractor Co., Houston, Tex., executive vice-president; F. J. Fitzpatrick, Parker-Danner Co., Hyde Park, Mass., president; H. J. Mayer, Western Machinery Co., San Francisco, Calif., vice-president; J. A. Young, R. J. Fyfe Equipment Ltd., Regina, Sask., Canada, vice-president; Braxton Blalock, Jr., Blalock Machinery & Equipment Co., Atlanta, Ga., treasurer.*

## "Things Look Good" For Distributors

*Equipment dealers at AED meeting in Chicago see good business ahead, but with plenty of competition and worries over profit margins.*

Optimism had the floor at the 40th annual meeting of the Associated Equipment Distributors in Chicago January 25-29. The record 4,200 delegates heard distributors and manufacturers describe a revitalized business outlook for 1959, though liberal doses of caution were sprinkled through the remarks.

AED's 1958 president H. D. "Andy" Anderson of Rish Equipment Co., Bluefield, W. Va., predicted that contracts to be awarded in 1959 should exceed 1958 and would probably be the highest in the nation's history. And according to Federal Highway administrator Bertram D. Tallamy, "There will be an increase in actual highway construction in 1959, as compared to 1958, of about 49 percent."

These predictions were not offered without qualifications by any of the speakers. They all cautioned that business would be highly competitive, and that a

reasonable profit margin would be difficult to achieve for all segments of the industry—contractor, construction equipment distributor, and manufacturer.

● In his opening business address, President Anderson warned that potential gains hinge on "better management" practices.

In appraising 1958 as "very disappointing" for most distributors, Mr. Anderson singled out these major causes: the general recession which caused numerous private projects to be cancelled or postponed; "unprecedented bad weather" in many states, resulting in a shortage of working capital for many contractors; and over-stocked inventories for most distributors and manufacturers. "It seemed to be just a squeeze all the way around," was his recap of the year just ended.

Resolutions stating the Association's position on tax relief for small business and government dis-

posal of surplus construction equipment received the wholehearted support of the convention at the opening business session on January 26.

The tax-relief resolution urged Congress to give "early consideration" to bills presented by Congressmen Frank Ikard and Thomas Curtis of the House (H.R. 2, H.R. 13), and Senator John Sparkman on behalf of himself and Senators Hubert Humphrey and Estes Kefauver (S. 59). These bills would amend the income tax laws to permit small and medium-sized business to retain out of their earnings funds required for (a) increases in unit costs and number of units in inventory, (b) reasonable modernization and expansion of facilities and (c) reasonable reserves for other working capital purposes.

This is legislation supported by AED and 56 other trade associations.

● Over-acquisition of heavy con-

struction equipment by the defense agencies has led the government into direct competition with both contractors and distributors, states the second resolution. It encourages (1) that these agencies review their regulations and procedures for disposal of this equipment, (2) that appropriate Congressional committees investigate the surplus disposal program to determine legislation that would protect normal channels of distribution from government competition and (3) that House and Senate appropriation committees examine the utilization of current defense inventories of construction equipment and the policies of such agencies with respect to acquisition and surplus disposal of such equipment.

The resolution points out that serious problems have arisen for distributors and contractors caused by government disposal practices. Substantial quantities of surplus equipment are being sold at nominal costs to state, county, municipal and other local government agencies. There is evidence that these agencies are using this equipment in direct competition with contractors. And, there is further evidence, according to the resolution, that some local government agencies are going into construction equipment distribution by purchasing equipment for which they have no direct use and either renting or selling it to potential customers of the distributor.

Featured speakers on the Monday business program were E. G. Swigert, president, The Hyster Co., Portland, Ore., a past president of

the National Association of Manufacturers, and Dr. William G. Van Note, president of Clarkson College of Technology, Potsdam, N. Y.

Mr. Swigert hammered home the increasing importance of the businessman's responsibilities in determining the course of government.

A new program to provide highly-trained young men for construction equipment distribution was explained by Dr. Van Note. Clarkson, working in close cooperation with AED, has developed a college curriculum leading to a bachelor of science degree in construction equipment distribution. The program will help the dealer meet the increasingly complex needs of the industry by providing him with personnel with the technical training that the industry will require.

Other business sessions dealt with a forecast of the next ten years, the effect of taxes and inflation on business, and a roundtable on industry problems labeled 'top priority'. Delegates also witnessed a novel press conference on the construction equipment industry. Participants were representatives of the industry, a panel of leading press personalities, with television figure Martha Rountree as moderator.

Some of the comments gleaned from this event:

- In the past 2½ years, 106 percent of the goal of the federal highway program for the period has been achieved.

- The prospect of any rate revi-

## 1959 AED Officers

F. J. Fitzpatrick, Parker-Danner Co., Hyde Park, Mass., was named president of AED during an election of Association officers for 1959 conducted during the convention.

Other officers are: J. A. Benson, Benson Tractor Co., Houston, Texas, executive vice president; H. J. Mayer, Western Machinery Co., San Francisco, Calif., as vice president; R. F. Newlin, Newlin Machinery Corp., Kansas City, Kans., as vice president; J. A. Young, R. J. Fyfe Equipment Ltd., Regina, Sask., Canada, as vice president; and Braxton Blalock, Jr., Blalock Machinery and Equipment Co., Inc., Atlanta, Ga., as treasurer.

sion in equipment financing is very slim at this time. If anything, the rates could conceivably firm up.

- In 1959 it will be necessary for the contractor to devise better, faster and less costly means of doing a job. The distributor who sells him the equipment will have to recommend the right equipment, the right size and the right make to do that job, and give the best possible service.

- Before entering a financing arrangement, the distributor should take a hard look at the capability of the contractor to do his work properly, or the distributor may find that, while he thinks he is involved with the contractor in debt financing, he may suddenly discover it is equity financing.

## PRESS CONFERENCE "ON STAGE" AT AED MEETING

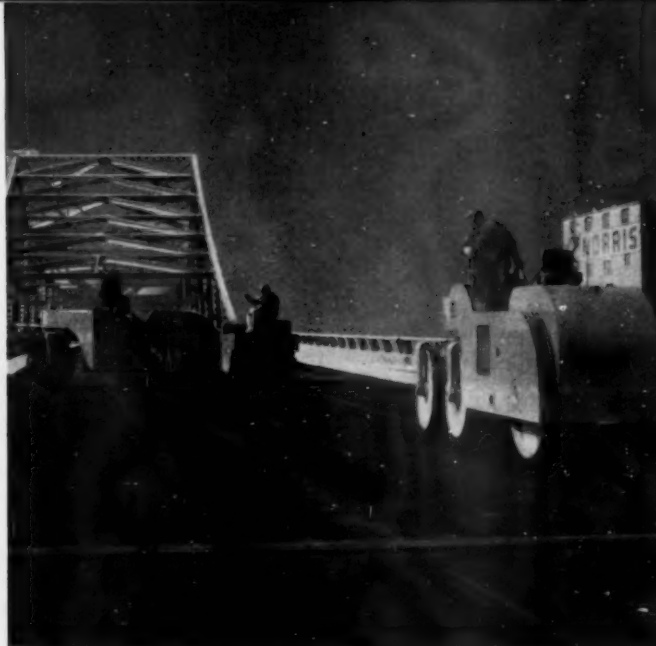


● On-stage before the AED delegates at Chicago—Martha Rountree of TV fame moderating a press conference on the highway program. Industry names among the panel included B. T. Tallamy, federal highway administrator (for engineering); Robert M. Hoover, president of Kansas City Bridge Co., Kansas City, Mo. (for contracting); G. A. Gilbertson, president of Frank G. Hough Co., and president-elect of CIMA (for manufacturers); Herbert R. Silverman, of James Talcott, Inc. (finance).

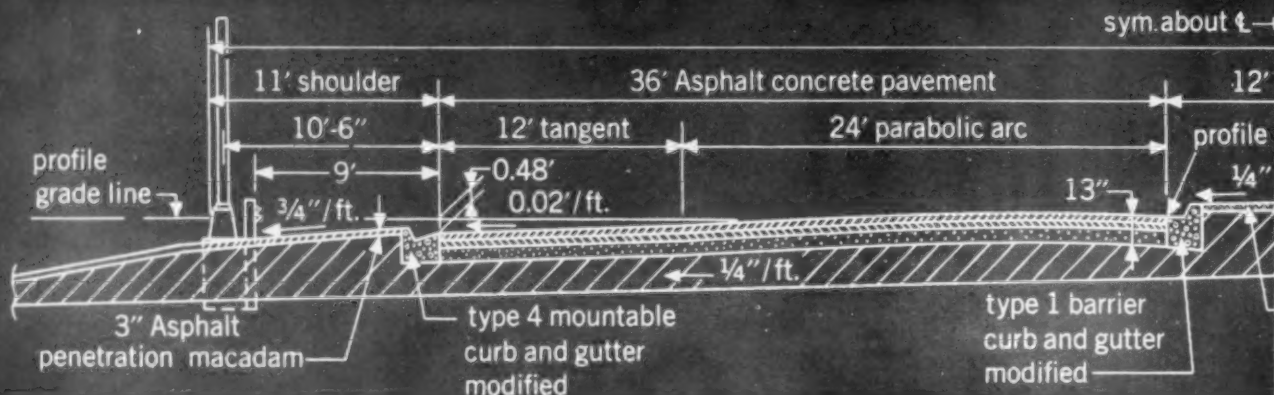




To lay Asphalt concrete on bridge decks in winter the contractor used three, 12-foot finishing machines. By paving simultaneously cold longitudinal joints were prevented. Finishers were followed immediately by 2- and 3-axle tandems.



One-inch binder course is compacted by tandems. Self-propelled pneumatic-tired roller ballasted with ten tons of sand complete compaction. Ordinary household detergent in water prevented Asphalt pick-up by rubber tires of the heavy equipment.



*Chicago's Calumet Skyway proves it!*

## Modern, durable, Asphalt paving

Paving of the Windy City's 7.7 mile Calumet Skyway; an elevated, twin-36-foot-lane toll facility; started in October 1957. By April 16, 1958...just six months later...it was opened for traffic.

Mind you, the job was done in midwinter and had to be paced to the completion schedules of fill and bridge sections.

It is safe to say that when laid down in midwinter at this speed only modern Asphalt concrete construction could have satisfied the engineering standards for this pavement structure. Competitive bidding established that Asphalt concrete was also the least expensive material.

To the direct construction savings, resulting from the speed and low cost of Asphalt paving, must be added extra revenue realized by the ability to open this toll facility in time for 1958 summer traffic.

The road's designers point out that modern Asphalt construction also provides the desired durability, minimum maintenance, minimum traffic noise, fast melting of snow and ice with no trouble from deicing salts.

**Asphalt concrete is easily the most versatile paving material.**

In this example Asphalt concrete proves out on 18-foot



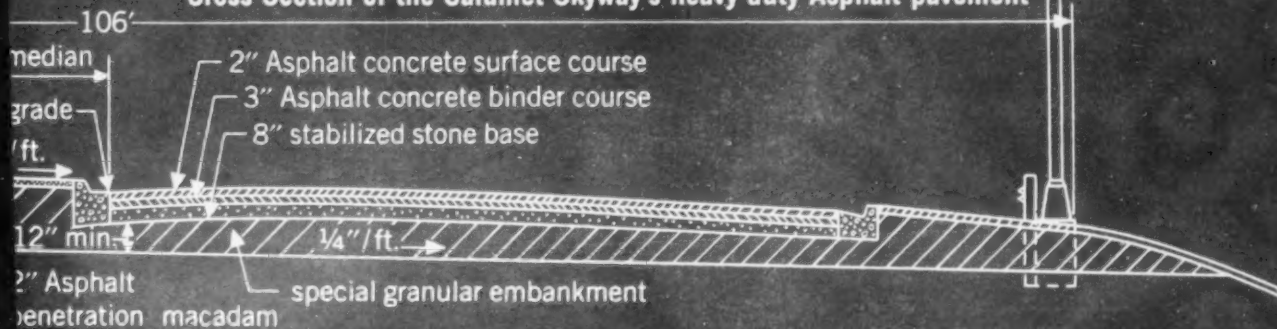


**Specially-equipped trucks bring mix to finishers.** Insulated truck beds and tarpaulin covers protect mix, bring it to job at best laying temperature. Canvas aprons on spray bars of distributors keep prime from blowing on curbs and sidewalks.



**Before and after rolling,** luteman, raker and straight-edge man check the mat. Despite 2-inch high expansion and contraction plates every 100 feet, mat goes down true to grade. A 13-20 ton roller irons wearing surface to final smoothness.

#### Cross Section of the Calumet Skyway's heavy-duty Asphalt pavement



## is done at record, tax-saving speeds

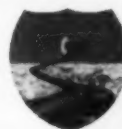
fill and on bridge decking. In Louisiana it is performing well over virtual quagmires. In Ohio, it proves ideal on glacial till. In New England, it has taken years of alternate freezing and thawing in its stride. Along Oregon's rainy coast Asphalt concrete is the only paving that lasts. In the Southwestern desert regions, where eggs can be fried on road surfaces, Asphalt concrete is by far the preferred pavement. In mountainous terrain, Asphalt concrete is the easiest material to lay and it conforms to foundation settlement without fracturing. In New Jersey, it was selected to handle the world's heaviest turnpike traffic loads ... 4,012,815 vehicles in July 1958 alone.

... for more details circle 280 on enclosed return postal card

Under all these conditions and more, modern Asphalt concrete has proved itself the least costly pavement to build and to maintain. When you specify it, you make your state's road-building tax funds go **much** further.

*Ribbons of velvet smoothness...*

**ASPHALT**-paved Interstate Highways



**THE ASPHALT INSTITUTE**

Asphalt Institute Building, College Park, Maryland



J. R. Cianchette

## Cianchette's Tractor-Shovels

### Spark Many-Sided Operation

*Standardization further aids J. R. Cianchette in making fullest use of the mobility and production capacity of the firm's tractor mounted loaders.*

**T**ractor-shovels are used today for tasks that have become so numerous and varied that many of the contractor's operations are literally built around them, with much other work procedure dependent on their availability.

For such reasons J. R. Cianchette, general contractor, of Pittsfield, Maine, has given much thought to how to fit this type of unit into the firm's 375-unit fleet of earthmoving, construction and material producing equipment. Cianchette is one of New England's largest contractors, with a recent 1,100-man pay-

roll including a highly developed equipment staff under several mechanical superintendents. The firm has its own aggregate production, concrete ready-mix plant and asphalt plant.

Standardization on one make for various major equipment types (shovels, trucks, tractors, etc.) is a policy which has paid the company in various ways—mechanics can become specialists in the makes handled, fewer parts are carried. The firm's tractor-shovels are Michigans, consisting of two 2-yd. Model 125As, three 2¾-yd. 175As, a 4-yd.

275A and a 6-yd. 375A. All of these units are under the care of one assigned superintendent.

Cianchette's first Michigans, a pair of 175As, were acquired in 1955. As of mid-1958 one of the machines, to select a case example of activity, had clocked over 7,000 operating hours. According to operator Ken LaPoint the rubber tires were then good for another 2,000 hours or more. Cianchette and staff seemed to like the 175As pretty well as being reliable, well designed as to power, weight balance, ability to handle the bucket, etc. In 1957, a demonstration sold them on a 4-yd. and the string has since expanded.

● *How Cianchette Operates.* The firm usually sets up an aggregate

● The 175A on stockpile reloading—a truck loaded in one minute.



● Cleaning up around the ready-mix plant while waiting for trucks. One of a dozen different chores this machine may do before sundown, aided by 25 mph mobility.



● The 6-yd. Michigan (Model 375A) takes only three passes to fill this 17-yd. semi-trailer bed at Cianchette's gravel plant.



● Without delaying truck loading, this 2-yd. tractor-shovel was able to momentarily aid the clamshell operator by shoving material toward the crane, bring around extra scoopfuls from the pit, etc.

plant with hot-mix and ready-mix facilities to service a general area in connection with bidding on various construction contracts. It has a northern district for work on local highway, military and other projects.

The tractor-shovels normally feed haul trucks and handle stockpile work at the aggregate plants. Depending upon the work load, one or two or three tractor-shovels may be busy in the pit. Tractor-shovels not handling aggregate production work go out on Cianchette construction projects. If needed, a call is made for a tractor shovel and it returns to the pit over-the-road at 25 mph speeds.

Cianchette's operations near Bangor are typical. Here he has set up an aggregate plant in a gravel pit, plus a concrete batch

plant and a hot-mix plant. The crushing and screening plant produces processed sand, 1-in. and 2-in. stone. The concrete batch plant produces up to 160 cu. yd. per hour—often works a 10-hour day. The blacktop plant turns out 500 to 600 tons a day.

The sand and stone needed for all these operations is handled at least once by a tractor-shovel. The 6-yd. machine bought last May has been the workhorse the last few months. When loading 17-yd. truck-trailers, this high-production machine heaps the load to overflowing in three passes in 1½ minutes. It heaps a 12-yd. truck in two passes in less than a minute. This tractor-shovel, alone, loads out about 500 cu. yd. an hour of sand and stone. Cianchette estimates that the 6-yd. Model 375A tractor-

shovel easily does the work of three 175A 2-yd. tractor-shovels—and thus saves two operators while costing less than the three to own and operate.

Most often the tractor-shovel loads 12-yd. shuttle trucks in the pit that run from plant to stockpile. But sometimes the tractor-shovel carries a bucket load right to the clamshell feeding the batch plants, when a pile is running low. This expediency keeps the clamshell working while a shuttle truck is being tracked down.

The tractor-shovel cleans up around the plants, keeps the roadway underneath the discharge hopper clear and uncluttered for easy entry by hot-mix and ready-mix trucks.

The tractor-shovels not working in the pit find much to do on other Cianchette jobs. Around Bangor, Cianchette has recently been working on highway bridges, road projects, an \$8,000,000 housing development, and a \$14 million expansion and improvement project at Dow Air Force Base.

On these jobs, the 6-yd. unit for example, has because of its size and capacity been used to load out broken concrete runway pavement; excavate for the new and deeper runway and apron subbases; back-fill around new foundations, footings and slabs; tow disabled vehicles to the service shop; serves as a crane when big tires are charged; unload platform trucks coming in with items such as expansion tanks, reinforcing steel, metal culverts, concrete pipe; grade haul roads on the work sites—and do these jobs from dawn to dusk. Maine's short (7 to 8 month) work season necessitates 16-hour days.

MORE THAN 5,450 PERSONS visited the 4-day open house at the new 85,000 sq. ft. plant of Owatonna Tool Company, Owatonna, Minn., recently.



# Device <sup>Dick</sup> May Revolutionize Method Of Compacting Construction Base

By MARDO WILLIAMS

A Columbus-made product may be on the way to eliminating one arduous construction task. Designed to compact earth and material quickly, efficiently and at a fraction of the cost of present methods.

The gasoline motor-driven

Jay Tamper

of which

October

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model

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and 24 inch

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2200 18

minute

tamping shoe

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For

square in

fraction of the in

costs \$788 F.O.B.

the price of a

air hammers, it

used to pound

THE "JAY"

Company

2222 S. THIRD ST.

COLUMBUS 7, OHIO

See your "JAY" dealer today or

write to...

THE "JAY"

Company

2222 S. Third St., Columbus 7, Ohio

Please send me additional information on the "JAY" TAMPER

My name

Address

City

State

Zip

...

for more details circle 398 on enclosed return postal card

A 50-man force currently is producing at the rate of 300 tampers a month and will speed up the tempo to keep the construction industry supplied during the April-to-October rush.

A larger machine, with a standard 24 inch tamping shoe, is just getting into production, and complete units are being designed for a machine with an 8-foot shoe which could be used to tamp the base for new asphalt surfacing of highways and

A V-shaped shoe also is being developed to compact the earth on both sides of a ditch.

of the new unit is being used on construction sites in Alaska and

They are holding the most interesting chat with officials who have been in

STATE SHOES virtually everywhere. The drive shaft with the tamping shoe is mounted on a

power air-cooled motor. For its own protection, it is mounted at altitudes of more

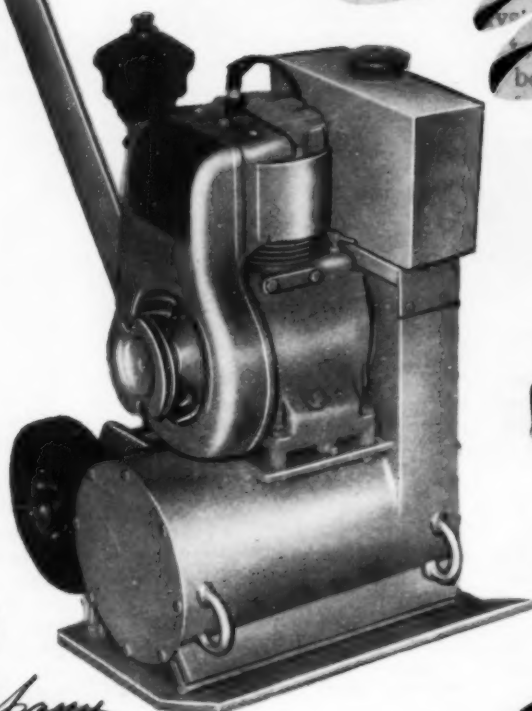
than 100 feet. The new unit is being used on construction sites in Alaska and

officials like to compare the work done. For example, the J-18

air compressor crew worked on the result, a completed job at a cost of only 7 mills (7 cents per cubic foot) as compared with 15

The new J-18 delivers three times the tamping speed and efficiency of the now famous J-12. Now you can have three times the compaction and up to three times the profit with the newest in the Jay line, the J-18. Modern compaction costs and procedures demand the fast, dependable tamping that has become a Jay trade mark despite imitations and competition.

It costs no more, and often less to get the finest. Engineered and built by compaction pioneers who put "quality first", the J-18 is available now at your nearest Jay dealers.



THE

BIGGEST

NEWS

IN

COMPACTION

HISTORY!

J-18





# REO

**America's most advanced and proven all-wheel drive trucks.**—Reo designs 6 x 6's for specific commercial application, utilizing its long experience in the production of 6 x 6 military units. These trucks have established Reo as the standard in Florida's giant ready-mix and construction fleets where all-wheel drive traction is a must for negotiating adverse terrain.

Available front-driving axles, which can be disengaged, have heavy-duty, double-reduction gearing. Because these units go in and get out of almost anyplace, they fill a definite need in all fleets operating off-highway. REO DIVISION, The White Motor Company, Lansing, Michigan.



*Gold Standard of Values*

## The CLEVELAND 240 TRENCHER

12' x 2½' **V** CONVEYOR

- Power-Shifted
- Power-Folded

controlled from operator's seat

**WORLD'S FINEST  
TRENCHER CRAWLER**

**DIGS FULL 3' WIDE by 6'3" DEEP**



For 20" dia. pipe 240 here digs trench to average 4' deep, 34" wide at bottom, sloped to approx. 5' wide at top.

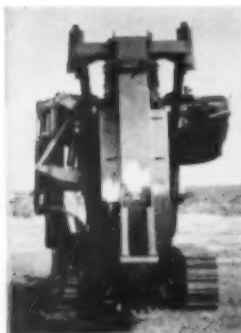
**V CONVEYOR**... provides maximum clearance under digging wheel rims...allows higher heaped loads without clogging...provides constant elevating angle for faster, higher spoil discharge... reduces rolling and tumbling...has stronger, torsion-free construction...employs huskier, longer-lived bearings.

**POWER-SHIFT**...operator controls hydraulic shifting and positioning of conveyor...digs past poles, trees, fences...places spoil where needed...all without leaving seat, without interrupting other operations.

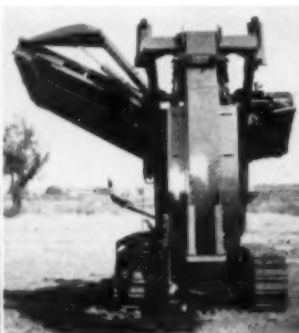
**POWER-FOLD**...brings conveyor's 12-foot length down to within trencher's overall 8-foot

width...permits transport without special highway permits...same automatic system unfolds conveyor to digging position.

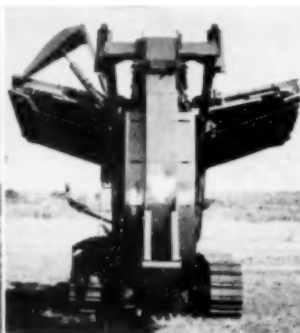
**FINEST CRAWLER** on any trencher...double flanged wheels, rollers and sprockets with wide spaced teeth...drives on each end of 1½" dia. hardened pins...completely eliminates pockets for dirt, stones, etc. ... gives greater track stability ... lengthens wear life ... sprockets, wheels and idlers ride on sealed ball or roller bearings requiring only 200-hour lubrication ... has big 16" x 3" hydraulic steering brakes...a tremendously long-lived, trouble-free, easy-rolling crawler track.



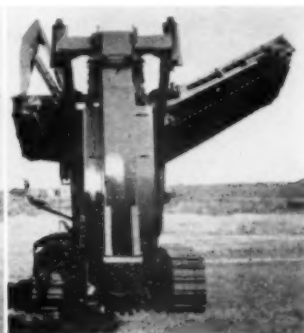
Power-folded



Power-shifted, left



Centered V Conveyor



Power-shifted, right



**The CLEVELAND TRENCHER Co.**

20100 St. Clair Avenue

Cleveland 17, Ohio

... for more details circle 308 on enclosed return postal card

## New Products

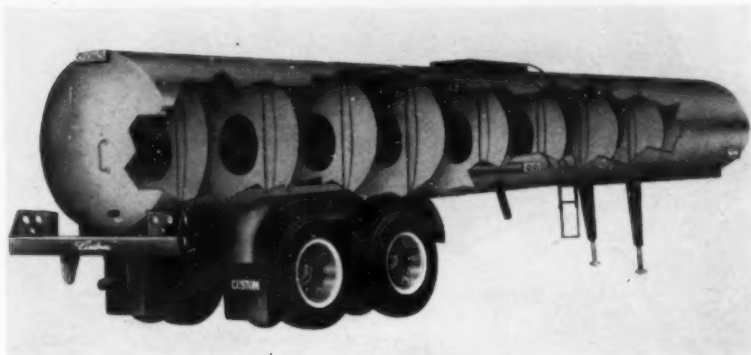
### Reader Service Numbers on Enclosed Postcard

To readers outside of the United States—Sorry, postal rules forbid use of business reply cards outside of the U.S. Please write to us listing the numbers, month and name of magazine, and mail with your name and address to Inquiry Dept., Roads and Streets, 22 W. Maple St., Chicago 10, Ill., U.S.A.

cations include variable weight from 10 to 30 tons, 94-in. rolling width, five speeds in both forward and reverse, and a maximum speed of 17 mph.

Tampo Manufacturing Co., Inc., P. O. Box 4248, Station A, San Antonio, Texas.

For more details circle 102 on Enclosed Return Postal Card.



Custom Head Asphalt Tank

### Asphalt Trailer Tank

Chief feature of a new asphalt trailer tank manufactured by Custom Head, Inc., is the double wall construction with the outside wall designed to coincide with the expansion/contraction of the inner wall. This is accomplished by constructing the outer wall with sheets "S" lapped, being free to permit sliding action and yet providing watertight, rigid fitting. The sleeve-type outer wall offers a high degree of insulation value, according to the manufacturer, and allows the transportation of hot asphalt in weather extremes. The tank design is tapered to aid in quick, easy flow of materials out of the tank. A new type of drain valve can be operated manually at the rear, bottom of the tank or from topside.

Custom Head, Inc., Springfield, Mo.

For more details circle 101 on Enclosed Return Postal Card.

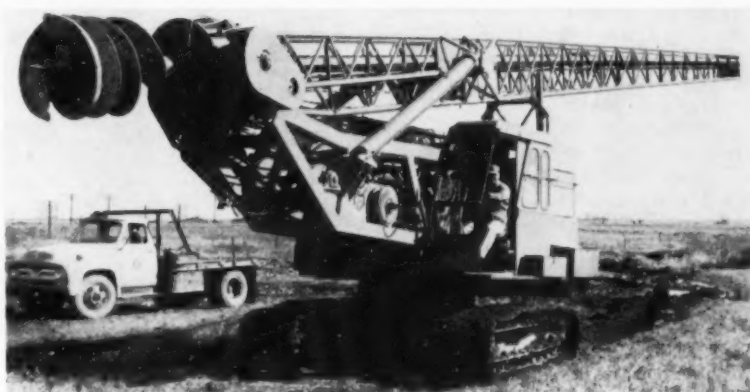
### Pneumatic Tired Roller

A new 30-ton pneumatic tired roller by Tampo features torque converter power and an automatic clutch reverse mechanism for fast reversing cycles.

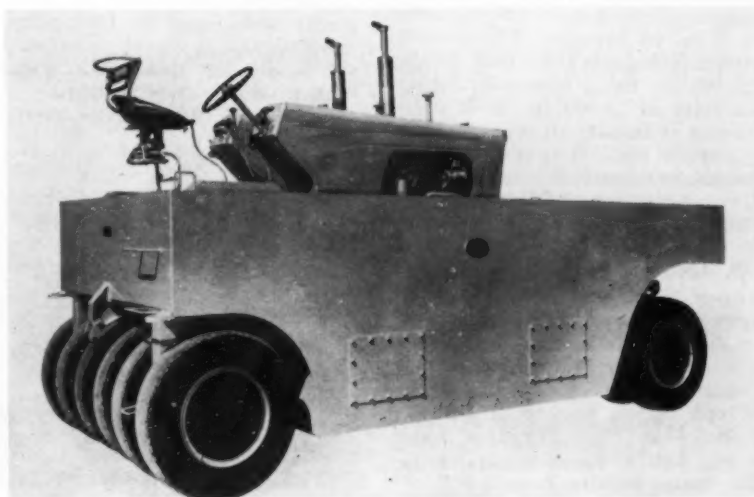
Stability and flotation provided by the flexibly mounted 11-wheel arrangement are stated to prevent ridging loose material and to permit high unit pressure rolling of lower bearing ratio materials in subgrade and embankment work with least change of ballast load. Specifi-

### Earth Boring Machine

The Hugh B. Williams Mfg. Co. reports that in its new earth boring machine it has incorporated the desirable features of a crane-accessory drilling rig and the advantages of a standard track mounted unit. The model LLDH boring machine mounted on a model 44 Lima crane is capable of augering holes up to 8 ft. in diameter to a maximum depth of 60 ft. The flotation and stability of the long tracks and undercarriage facilitate movement from hole to stake, and the



Williams Earth Boring Machine



Tampo 30-Ton Roller

machine is said to provide extra reach for inaccessible spots.

This crane mounted digger also offers high and low speed rotary clutches, 8 forward auger rotary speeds and four reverse, dual facilities for hoisting and extending the kelly bar, and friction clutches to provide high speed in-and-out operation.

National distributor: Joslyn Manufacturing and Supply Co., 2101 Corinth St., Dallas, Texas.

For more details circle 103 on Enclosed Return Postal Card.

## Asphalt Finishers

Two new Barber-Greene asphalt finishers are the Model SA-60, which is mounted on special, high speed tractor-type crawlers, and the Model SB-60, which features a new type of pneumatic tire mounting. Both offer a selection of speeds from 14 ft. per minute to 12 mph, in both forward and reverse. In order to provide for maximum operating and travel speeds, both rubber tires and crawlers have larger than normal diameters, with the crawlers, for example, 3 ft. high.

The new pavers have dual-range power steering, also offer a "live storage" hopper featuring an ability to get the load of mix away from the truck more quickly, it is said. This has the effect, it is said, of increasing receiving hopper capacity to keep pace with the forward speeds.

Barber-Greene Co., Aurora, Ill.

For more details circle 104 on Enclosed Return Postal Card.

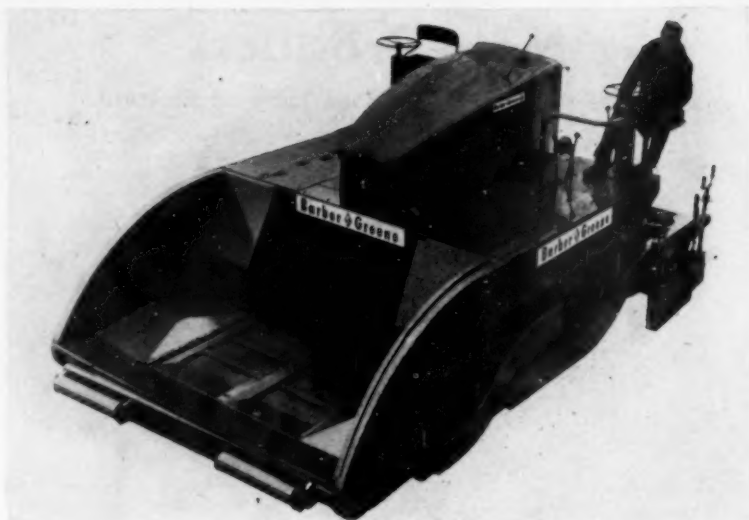
## 3-Yd. Tractor Shovel

A new Model 304 tractor shovel, added to the Trojan line, is rated at 3 cu. yd. capacity. The 4-wheel drive, pneumatic tired unit weighs 27,400 lb., has a maximum lifting capacity of 18,000 lb. It is engineered to handle all types of bulk materials with, it is stated, maximum operational efficiency and service accessibility and full 360-deg. visibility.

The machine is powered by a 6-cyl., 401-cu. in. displacement diesel engine developing 160 hp at 2,500 rpm. It is equipped with a full power shift, 4-speed transmission, and a 3.0 to 1 torque multiplying torque converter. Travel speed ranges from 3 mph in low gear to 23 mph in fourth gear.

The Yale & Towne Manufacturing Co., Trojan Division, Batavia, N.Y.

For more details circle 105 on Enclosed Return Postal Card.



Barber-Greene Model SB-60 Finisher



Model 304 Trojan

## New Motor Grader

The new 150 hp No. 14 motor grader announced by Caterpillar, was designed, it is said, to tailor it specifically for those jobs where high productivity is required.

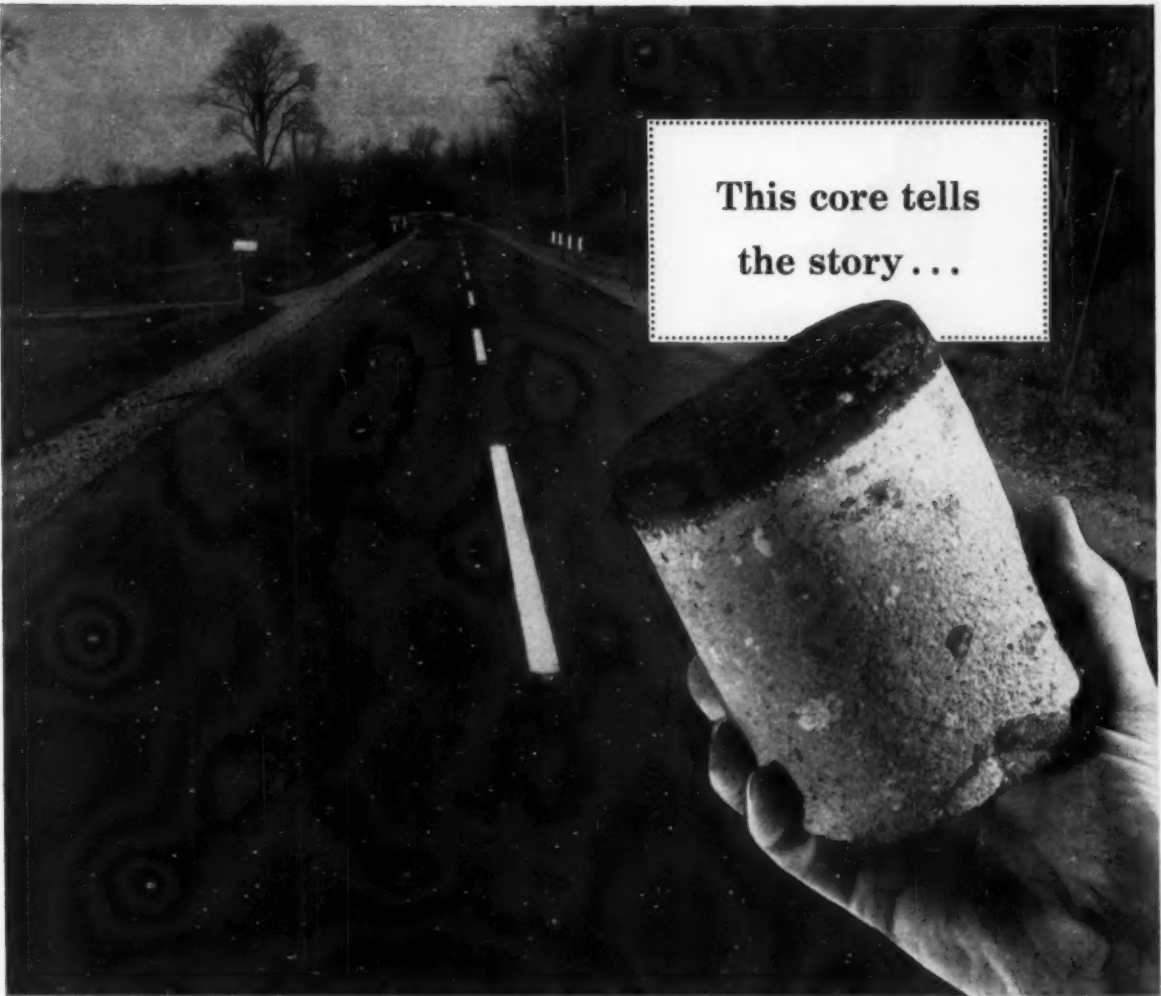
The use of 10.00-in. rims for the

14.00 x 24 tires provides a wide rim base, thus straightening side walls and reducing any side-rolling tendencies. Height of the 12-ft. moldboard is 27 in., as compared to 24 in. on the current No. 12. Of the machine's total 29,050 lb.



Cat No. 14 Motor Grader





This core tells  
the story . . .

*By 1958, compressive strength had increased to 2,150 psi on this 1940 road in Androscoggin County, Maine. This soil-cement pavement has successfully withstood temperatures from -28°F. to 102°F. Approximate average precipitation for this area is 40 inches.*

## 18 years on Maine's Route 136

**... soil-cement pavement grows stronger year by year!**

**Proved again—soil-cement holds up like no other low-cost pavement, delivers long years of service as shown on Maine's Route 136.**

You start saving right away with soil-cement . . . in most cases 75% of the materials are free. Mix almost any soil, even old gravel bases and blacktop surfacing, with portland cement and water. Then place a thin bituminous surface after the mixture hardens. That's it. More than a mile

a day can be built by well-organized crews using modern equipment. Genesee County, Michigan, recently set a 3.5-mile-a-day record.

And soil-cement is stronger inch for inch than any other paving material short of concrete. No pot-holes or soft spots. Upkeep is low.

Low first cost, low maintenance and long life stretch road budgets, permit long range programming by highway engineers.

It's America's fastest-growing,

low-cost pavement. In 1958, contracts for soil-cement on roads, streets, shoulders, subbase, airports and parking lots were almost double the previous year. Free, illustrated literature, distributed only in the U.S. and Canada, on request.

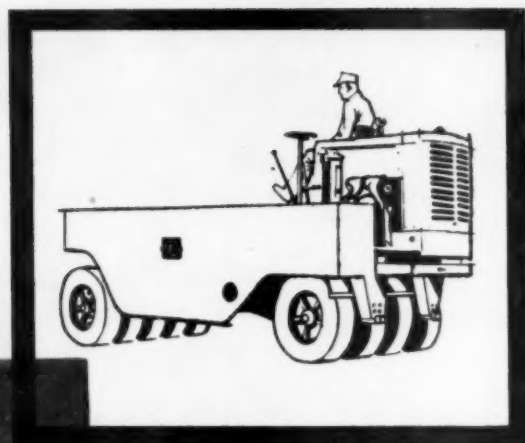
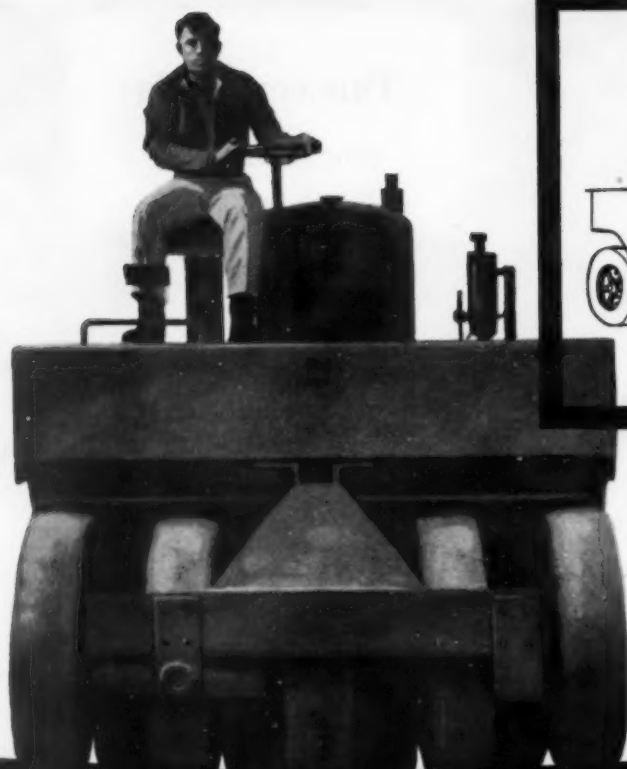
**MODERN  
soil-cement**

### **PORTLAND CEMENT ASSOCIATION**

Dept. A1-35, 33 W. Grand Ave., Chicago 10, Illinois

*A national organization to improve and extend the uses of portland cement and concrete*

*. . . for more details circle 362 on enclosed return postal card*



**The less stable the base... the more you need BMCO SPR-9's**



**BROWNING MANUFACTURING CO.**

P. O. BOX 2707 • SAN ANTONIO, TEXAS • WALnut 3-4331

Exclusive independent oscillation of ALL wheels on the BMCO SPR-9 makes possible uniform compaction of soft spots and voids to specified densities without overloading any one tire. With the largest power unit of any roller in its class, larger displacement, and with four speeds forward and four reverse, the BMCO SPR-9 is the finest and most dependable self-propelled roller made. Try before you buy — you'll go BMCO.

... for more details circle 295 on enclosed return postal card



There's a

**BROWNING MANUFACTURING CO.**

dealer near you

#### ALABAMA

Ray-Brooks Machinery Co., Inc., Montgomery, Mobile.

#### ARIZONA

Tractor & Equipment Co., Inc., Birmingham.

#### ARKANSAS

Min-A-Con Equipment Company, Phoenix.

#### CALIFORNIA

Kern-Limerick, Inc., Little Rock.

#### FLORIDA

Action Equipment Company, Stockton.  
Florida-Georgia Tractor Company, Lakeland, Jacksonville, Tallahassee, Orlando, Tampa, North Miami Beach.  
Ray Brooks Machinery Co., Pensacola.

#### GEORGIA

Tractor & Machinery Company, Atlanta.

#### IDaho

The Sawtooth Company, Boise, Idaho Falls, Twin Falls.

#### ILLINOIS

McAllister Equipment Co., Melrose Park, Machinery, Inc., Springfield.  
Peoria Machinery, Inc., Peoria.

#### IOWA

Hawkeye Machinery Company, Des Moines.

#### KANSAS

Southwest Equipment Company, Dodge City.  
The Victor L. Phillips Company, Wichita.

#### MARYLAND

John C. Louis Company, Inc., Baltimore, Washington, D.C.

#### MICHIGAN

The Acme Equipment Company, Detroit.

#### MISSISSIPPI

Euclid-Mississippi, Inc., Jackson.

#### MISSOURI

The Victor L. Phillips Company, Kansas City, Machinery, Inc., St. Louis.

#### MONTANA

Hall-Perry Machinery Company, Billings, Butte, Great Falls, Missoula.

#### NEBRASKA

Nebraska Machinery Company, North Platte, Scottsbluff.  
T. S. McShane Company, Inc., Omaha.

#### NEW JERSEY

Equipment Distributors, Inc., Little Ferry.

#### NEW MEXICO

N. C. Ribble Company, Albuquerque.

#### NEW YORK

Rochester Road Equipment Inc., Rochester.

#### NORTH CAROLINA

J. B. Hunt & Sons, Inc., Raleigh, Charlotte.

#### NORTH DAKOTA

Schultz Machinery Co., Bismarck, Minot.

#### OHIO

Lorenz Equipment Company, Columbus.

#### OKLAHOMA

J. J. Turner, Inc., Cleveland.  
Bert Smith Road Machinery Co., Enid, Oklahoma City, Tulsa.

#### OREGON

Cal-Ore Machinery Co., Inc., Medford.  
Wood Tractor Company, Portland.

#### PENNSYLVANIA

Anderson Equipment Company, Pittsburgh, Bridgeville.  
Stewart Equipment Company, Philadelphia.  
Stewart Equipment Co., Harrisburg.

#### SOUTH CAROLINA

Southern Equipment Sales Co., Columbia.

#### SOUTH DAKOTA

J. D. Evans Equip. Co., Rapid City, Sioux Falls.

#### TENNESSEE

Tri-State Equipment Co., Inc., Memphis.  
Story Brothers, Inc., Knoxville, Chattanooga.  
Southern Machinery Co., Inc., Nashville.

#### TEXAS

Berry Bros. Machinery Co., Inc., Dallas.  
Caprock Machinery Co., Amarillo, Odessa.  
The Roy Klossner Company, San Antonio, Corpus Christi.  
E. L. Lester & Co., Houston.  
Rio Grande Machinery Co., El Paso.

#### UTAH

Archer Tractor & Mach. Co., Salt Lake City.

#### VIRGINIA

Richmond Machinery & Equipment Co., Lynchburg, Richmond.

#### WASHINGTON

American Machine Company, Spokane.

#### WEST VIRGINIA

Porter Supply Company, Huntington.

#### CANADA

#### BRITISH COLUMBIA

Purves Ritchie Limited, Vancouver.

#### MANITOBA

Kane Equipment Limited, Winnipeg.

#### NOVA SCOTIA

Coleman Machinery Company, Ltd., Halifax.

#### ONTARIO

Ontario Equipment & Supply, Ltd., Toronto.

#### QUEBEC

Laurion Equipment Limited, Montreal.

#### SASKATCHEWAN

W. F. Fuller Company Ltd., Regina.

## New Products

weight, 22,000 lb. rest on the drive wheels where it can be used, giving the unit the traction to fully utilize its large size and power.

Power for the new grader is provided by a turbo-charged engine rated at 150 hp with an 18 percent torque rise. This engine is said to be the first motor grader power unit ever to be equipped with a turbocharger.

Caterpillar Tractor Co., Peoria, Ill.

For more details circle 106 on  
Enclosed Return Postal Card.

## Crane-Excavators

A redesigned line of carrier-mounted, crawler-mounted and self-propelled  $\frac{3}{4}$ -yd. crane-excavators has been announced by Shield Bantam Co. The new Series 350 comprises three models with increased lifting capacities: 11 tons on the Model T-350 carrier-mounted; 11 tons on the self-propelled CR-350; and up to 8 tons on the crawler-mounted C-350. Major engineering changes and improvements on the new Series 350 include a new turntable design featuring a combination hook and trunnion roller design offering, it is said, fewer parts, more equal load distribution, less wear and maximum strength for the greatly increased capacities. In addition, the company's line of crane carriers has been redesigned.

Shield Bantam Co., Waverly, Iowa

For more details circle 107 on  
Enclosed Return Postal Card.

## Mercury Vapor Lights

New reflector type "Circle-D" mercury vapor lights, available for standard and high bay services, in flood, spot or color-corrected Merco-White, are made in 250, 400, 700 and 1000 watts, standard and high volts. Heavy



Mercury Vapor Light

cast aluminum housing affords full lamp protection. A spring mounted mogul socket supports and cushions shocks at the base, while the globe is centered and supported by a silicone rubber ring gasket. This double cushioning and shock dampening feature is said to add considerably to the bulb life. Other features include concealed heat resistant wiring, sure lock elevation adjustment on standard models, and a calibrated stanchion connector bracket permitting pre-setting of light beam pattern before installation.

Natale Machine and Tool Co., 339 Highway 17, Carlstadt, N. J.

For more details circle 108 on  
Enclosed Return Postal Card.

## Tractor Sideboom

A new sideboom for rubber-tired tractors, placed on the market by Midwestern Manufacturing Co., has a lifting capacity of 7000 lb. with all-hydraulic operation and a friction clutch for free spooling of the load line. A counterweight can be extended to in-



Bantam Crawler-Mounted



**Midwestern Sideboom**

crease stability on rough terrain or with heavy loads. The new sideboom is presently designed for use on the Oliver 770 industrial wheel tractor which is equipped with full-time power steering. Modifications are under way to adapt the sideboom for use on other models of rubber-tired tractors.

Midwestern Manufacturing Co., 4645 Southwest Blvd., Tulsa, Okla.

For more details circle 109 on Enclosed Return Postal Card.

### Truck Storage "File"

A new series of utility truck bodies which provides "file-box" convenience in storage of tools, materials, supplies and equipment is being manufactured by Reading Body Works, Inc.

Removable shelf and tray dividers, similar to those in file drawers, and removable shelves permit truck operators to vary the vehicle's interior compartment arrangements to suit daily



**"File-box" Truck Bodies**

requirements. The removable shelves are mounted on special die-formed steel brackets and can be changed instantly without tools. Three-dimensional slots in all shelves and material trays permit optional spacing of dividers on 1-in. centers. At the purchaser's option, shelves may be welded permanently in place.

Reading Body Work, Inc., Reading, Pa.

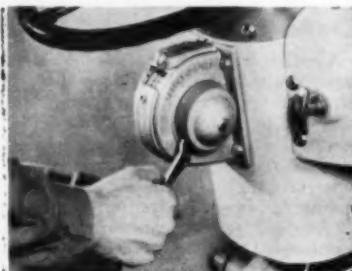
For more details circle 110 on Enclosed Return Postal Card.

### Stroboscopic-Tachometer

A new device for determining the rpm of any rotating or reciprocating mechanism has been announced by Kent-Moore Organization. Called J 6789 "Uni-Tac," this instrument is claimed to give accurate rpm readings

A recent demonstration of Ford Motor Company's new 1959 line of farm and industrial equipment before 2,600 tractor and implement dealers disclosed some new developments on the firm's industrial tractors. Besides announcing a new line of backhoes, the company also introduced its new tractor transmission, the "Select-O-Speed," which can be shifted "on the go" without the use of a clutch pedal and has ten forward and two reverse speeds.

Shifting from one gear to another is said to be just a matter of "dialing" the desired gear ratio with a small hand-controlled lever just below the steering wheel while the tractor continues to move.



**Select-O-Speed Transmission Lever**

For more details circle 112 on Enclosed Return Postal Card.



**New Ford Backhoe Attachment**

without any mechanical contact with the revolving object. The probe-type stroboscopic tachometer is portable and self-contained, requiring no outside power source. It utilizes a controllable intermittent flash of light on the ro-

tating object and automatically registers rpm on units speed range scale.

Kent-Moore Organization, Inc., 28635 Mound Road, Warren, Mich.

For more details circle 111 on Enclosed Return Postal Card.

## Ford Introduces New Features, New Equipment on It's Industrial Tractors

### Backhoe Attachment

Ford has announced the addition of three new backhoe models, in 10, 12, and 14-ft. sizes, as attachments for its industrial tractor. Reach of the 10-ft. unit is over 17 ft., that of the 12-ft. unit 19 ft., and that of the 14-ft. model more than 20 ft.

The backhoes are said to be able to undercut and dig under and well forward of the tractor's rear wheels, and they can dig on slopes and dump full bucket loads of spoil on the uphill side through a 185-deg. swing.

The 10 and 12-ft. backhoes can be used on Ford NAA, 600, 601, 800 and 801 tractors. The 12 and 14-ft. units can be used on the 1801 industrial tractor and the Fordson Major and Power Major diesel tractors. The 10, 12 and 14-ft. backhoes are available with standard bucket sizes of 12, 18 and 24 in., with corresponding bucket capacities of 2.5, 4.5 and 6.0 cu. ft., plus an extra-capacity bucket of 7 cu. ft.

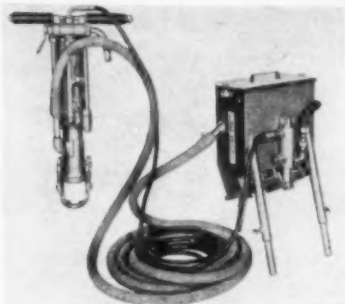
Tractor and Implement Division, Ford Motor Company, Birmingham, Mich.



## Dry Dustless Sinker

A new dry, dustless drill, the LHV45, has been announced by Le Roi. Cuttings are drawn into 5-hole CRD or Vac-Nu-Matic bits through hollow drill steel, into the drill chuck, and immediately out the side of the chuck housing. The cuttings do not travel through the drill, nor do they come into contact with working parts of the drill.

Designed to operate with the new LX-1 automatic dump dust collector



**Sinker Drill and Dust Collector Tank**

tank, the drill weighs 56 lb. and has a 1-in. hex x 4 1/4 in. chuck. Length is 25 1/2 in. The drill and dust collector tank operate at 80 to 90 psi. Air supply connection is 3/4-in. pipe, for use with 3/4-in. air supply hose. The dust collector hose is 1 in. The LX-1 dust collector tank weighs 45 lb. Tank size is 13 3/8 in. x 7 in. x 16 in.

Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wis.

For more details circle 113 on Enclosed Return Postal Card.

## Laboratory Compactor

A new electro-hydraulic compactor, developed by Soiltest, Inc., is said to



**Kneading Compactor**

feature a true kneading action and offer wide flexibility in preparation of test specimens in materials testing and research laboratories.

The model CN-425A kneading compactor can be used to prepare and compact samples of bituminous mixes, asphaltic concrete, soils and similar materials. Three new elements of flexibility have been introduced in this apparatus: adjustable compaction foot pressures, adjustable time of dwell on the specimen and a variable rate of compaction.

Soiltest Inc., 4711 W. North Ave., Chicago 30, Ill.

For more details circle 114 on Enclosed Return Postal Card.

## Control Valves

Kieley & Mueller, Inc. has announced a complete line of split-body control valves for use in high-temperature, high-pressure control applications. Chief features of the line are large flow capacities and face-to-face dimensions based on I.S.A. standards.

The use of I.S.A. standards permits complete interchangeability of the split-body line, not only with all regular K&M globe-body diaphragm valves.



**K&M Control Valves**

but with all other standard makes of diaphragm valves, the maker states. All major components—topworks, valve bodies, line flanges, plug and seat rings—are of unitized construction, making it possible to develop 432 different valve combinations from a single split-body, and enabling users, it is said, to keep inventories to a minimum.

Kieley & Mueller, Inc., 64 Genung St., Middletown, N. Y.

For more details circle 115 on Enclosed Return Postal Card.

## Off-the-Road Tire

A new tire, the Armstrong "Miracle S-L," is said to combine the advantages of a lug type tire with additional exclusive on-and-off the highway features. It is claimed to be the only tire with deep ridged lugs for needed traction

off the road plus interlocking sipes which provide superior traction over the highway. Equal length shoulder bars and closer circumferential positioning of cross bars provide a wider, flatter tread, putting more rubber on the road, it is said. Ejector grooves eliminate stone holding, groove cutting and stone bruises, according to the manufacturer.

Armstrong Rubber Co., West Haven, Conn.

For more details circle 116 on Enclosed Return Postal Card.

## 60-Ton Truck Crane

A new 60-ton capacity model 2900 truck crane has been added to the Manitowoc line. It is easily and quickly converted to clamshell or dragline, according to the maker. Both carrier and crane operate as an integrated unit. Outstanding carrier features in-



**Manitowoc Truck Crane**

clude separate engines; 2-axle drive; heavy duty air brakes on all wheels; full time power steering; highway speeds up to 35 mph; large, full vision cab; and choice of several makes of gasoline or diesel engines.

Manitowoc Engineering Corp., Manitowoc, Wis.

For more details circle 117 on Enclosed Return Postal Card.

## Closed End Wedge

Dayton Sure Grip and Shore Co. announces a modification of their standard closed end tie wedge. This wedge, which is used with the firm's form ties, is now made with ridges running across the water side of the wedge. The improvement is said to minimize the possibility of the twisting or turning of a wedge. The ridges bite into the water as the wedge is driven tight against it.

Dayton Sure Grip and Shore Co., Miamisburg, Ohio

For more details circle 118 on Enclosed Return Postal Card.

## "A fine crew and our REX Paving



**James R. Bazley**, vice president of J. Robert Bazley, Inc., Pottsville, Penn., can point to enviable results from bold planning and pioneering spirit. Starting in the open pit coal mining field in 1911 where many new production ideas were developed under J. Robert Bazley, this firm entered road building in 1938. One of its first highway jobs was through tough Pennsylvania terrain where another contractor failed. Growth has been steady ever since.



**"We'll beat the dead-line by 10% on this expressway job, a \$5,694,000 project. The schedule called for 280 working days; we should finish 30 days faster, thanks to our paving equipment and the skill of our men."**



Today's most advanced concrete road paving line is shown here in this Bazley job. "Our Rex Pavers with Hydrocycle have an ease of operation impossible to match," states Mr. Bazley.

This contractor is continually setting new records in its road paving jobs—and then breaking them!

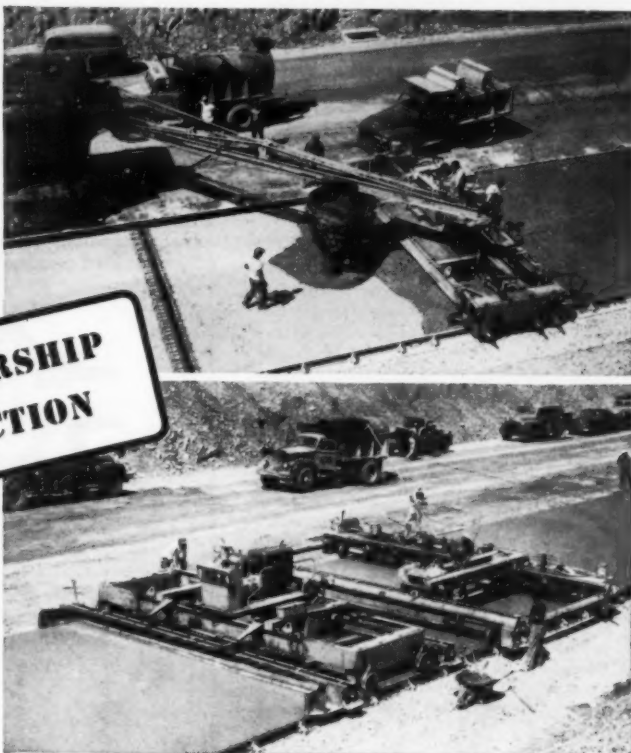
They did it on this 7.269 miles of 4-lane divided Harrisburg-Baltimore Expressway and connections. Moving its complete Rex Concrete Paving Spread onto the job, this firm mixed, placed, spread and finished concrete for two 24' lanes at a rate of 2000 feet per day—in spite of 16 bridges which cut up the straightaways.

"Our familiarity with Rex paving equipment dates back to 1939. Later two new Rex Pavers with Hydrocycle were added. All units have given us trouble-free operation, the only maintenance being the replacement of parts worn thin from years of service. This established Rex reliability was important in our decision to purchase a Rex Spreader, two Rex Finishers and a Rex Float."

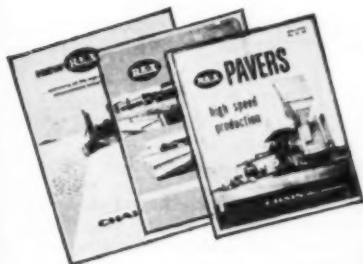
# Spread cut job time 30 days!"

The new, thoroughly proved Rex Spreader. Concrete is distributed evenly and quickly between the forms by smooth, steady screw action—no rocking of the forms. Quick and infinite frame adjustment—no bolts!

**LEADERSHIP  
IN ACTION**



"Power-widening on our Rex Finisher and the 24' working width permitted a 70% increase in production over former single-width equipment," states Mr. Bazley. This modern equipment gives you the fastest, smoothest precision finishing of roads and airports for maximum job profits.



## ROAD BUILDERS LIBRARY

Get the complete Rex file of road building machinery bulletins from your Rex distributor shown at right, or CHAIN Belt Company, 4652 W. Greenfield Ave., Milwaukee 1, Wis. In Canada, CHAIN Belt (Canada) Ltd., 1181 Sheppard Ave. East, Toronto, Ontario.

**YOU'RE INVITED** to inspect this road job via interesting picture-filled REX CERTIFIED REPORT NO. 121. Ask your Rex Distributor or us.

# REX<sup>®</sup>

**CONSTRUCTION MACHINERY**

## REX Distributors

**ALABAMA**—Leary & Owens Machinery Co., Birmingham • Leary & Owens Equipment Co., Mobile-Montgomery  
**ARIZONA**—Road Machinery Co., Phoenix-Tucson  
**ARKANSAS**—Lyons Machinery Co., Little Rock  
**CALIFORNIA**—Cal-Rex Machinery Sales, Los Angeles • Coast Equipment Co., San Francisco  
**COLORADO**—Booth-Rouse Equip. Co., Denver  
**CONNECTICUT**—The Holmes Equipment Co., Hartford-Norwalk  
**FLORIDA**—M. D. Moody & Sons, Inc., Jacksonville • Tampa • Blanchard Machinery, Inc., Miami • Blanchard Machinery of West Palm Beach, West Palm Beach  
**GEORGIA**—Yancey Brothers Co., Atlanta-Augusta-Macon • Sim Grady Machinery Company, Macon-Savannah  
**IDAHO**—Intermountain Equipment Company, Boise-Pocatello  
**ILLINOIS**—Western Contractors Supply Co., Melrose Park • Illinois Tractor Co., Mt. Vernon • Eighth Equipment Company, Rockford  
**INDIANA**—Stockberger Machinery, Inc., Ft. Wayne • Power Shovel Co., Indianapolis  
**IOWA**—Spreitzer, Inc., Cedar Rapids • Gibbs-Cook Equipment Company, Des Moines  
**KANSAS**—The Victor L. Phillips Co., Wichita  
**KENTUCKY**—Contractors Equipment Co., Inc., Lexington-Louisville  
**LOUISIANA**—Wm. F. Surgi Equipment Corporation, New Orleans  
**MARYLAND**—McClung-Logan Equipment Co., Inc., Baltimore  
**MASSACHUSETTS**—Powered Equipment Corporation, Newton Highlands  
**MICHIGAN**—Contractors Machinery Co., Detroit-Grand Rapids • Lake Shore, Inc., Iron Mountain  
**MINNESOTA**—The Zeco Company, Duluth-Hibbing-Minneapolis  
**MISSISSIPPI**—Southern Equipment & Sales, Inc., Jackson  
**MISSOURI**—The Victor L. Phillips Company, Kansas City • Hennessey-Forrestal Machinery Co., St. Louis  
**NEBRASKA**—Fuchs-Clayton Machinery Co., Omaha  
**NEVADA**—Pioneer Equip. of Nevada, Inc., Reno  
**NEW HAMPSHIRE**—New Hampshire Explosives & Machinery Co., Inc., Concord  
**NEW JERSEY**—Dale & Rankin, Inc., Hanover  
**NEW MEXICO**—Contractors Equipment & Supply Company, Albuquerque  
**NEW YORK**—Contractors Sales Co., Inc., Albany • MacDougall Equip. Co., Inc., Binghamton • P-D Service Inc., Buffalo-Pavilion • Theodore J. Burke & Son, Huntington, L.I.-Jamaica • Central New York Equip. Co., Inc., Syracuse  
**NORTH CAROLINA**—E. F. Craven Company, Greensboro-Greenville-Charlotte-Asheville  
**NORTH DAKOTA**—Northwestern Equip. Inc., Bismarck-Fargo • Northwestern Equip. Co. of Minot, Minot  
**OHIO**—Construction Equip. Corp., Cincinnati • George P. Williams Co., Cleveland • Cantwell Machinery Company, Columbus-Luckey  
**OKLAHOMA**—The Victor L. Phillips Company, Oklahoma City-Tulsa  
**OREGON**—Loggers & Contractors Machinery Company, Eugene-Portland  
**PENNSYLVANIA**—Anderson Equip. Co., Bridgeville • Furnival Machinery Co., Harrisburg-New Philadelphia-Philadelphia-Pottsville  
**SOUTH CAROLINA**—Jeff Hunt Machinery Co., Charleston-Columbia-Greenville  
**SOUTH DAKOTA**—Sheehan-Bartling, Inc., Rapid City-Sioux Falls  
**TENNESSEE**—Nixon Machinery & Supply Co., Inc., Chattanooga-Knoxville • Hawkins Equip. Company, Memphis • C. H. & L. Machinery Company, Nashville  
**TEXAS**—The Roy Klossner Company, Corpus Christi-San Antonio • Conley-Lott-Nichols Machinery Co., Dallas • Contractors Equip. Co., El Paso • R. B. Everett & Co., Houston • Nichols Machinery Co., Longview • Conley-Lott Machinery Co., Lubbock-Odessa  
**UTAH**—Arnold Machinery Co., Inc., Salt Lake City  
**VERMONT**—Reynolds & Son, Inc., Barre  
**VIRGINIA**—Nesbitt Equip. Co., Alexandria • Phillips Machinery Co., Norfolk-Richmond • Shelton-Witt Equipment Corporation, Salem  
**WASHINGTON**—Air Mac, Inc., Seattle • Intermountain Equipment Company, Spokane  
**WEST VIRGINIA**—Machinery, Inc., Charleston  
**WISCONSIN**—Hunter Machinery Co., Inc., Milwaukee-Green Bay  
**ALASKA**—Northern Commercial Co., Seattle, Wash.

Distributors in all principal cities of the world

... for more details circle 297 on enclosed return postal card

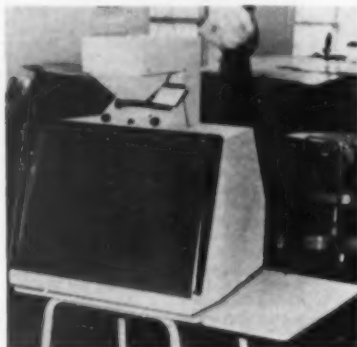
**ROADS AND STREETS, March, 1959**



## New Products

### Engineering Reader

The development of a new microfilm reader for engineering drawings is announced by the Filmsort Company, a division of Miehle-Goss-Dexter, Inc. Known as the "Designer 184," this new microfilm reader has a screen size slightly larger than 18x24 in. with an optical system that covers the entire microfilm frame within the Filmsort



**Filmsort Reader**

Military "D" aperture. With a nominal magnification of 15 times, the unit enlarges A, B, and C drawing sizes filmed at 16X reduction to almost full size. Larger drawings, filmed at 30X reduction, are enlarged to half size. The holder can be rotated 90 to 180 degrees and has a card stop for Military "D" location.

The Filmsort Company, Division of Miehle-Goss-Dexter, Inc., Pearl River, N. Y.

For more details circle 119 on Enclosed Return Postal Card.

### Tractor Loader

Production of the new Davis 99 economy loader is announced by Massey-Ferguson Industrial Division. The machine, which has a capacity of 2,000 lb. at half height and 1,500 lb. at full height, is available for the M-F Work Bull 202 and all utility models of Massey-Ferguson or Ferguson tractors, as



**Davis 99 Tractor-Loader**

well as those of Ford, International Harvester, Allis Chalmers and Oliver.

The new unit, said to be built 15 percent stronger than previous models because of its larger frame and thicker lift arms, has a 10 gpm pump and an operating pressure of 2,150 psi. The lift arms have a breakaway power of 2,500 lb. The single dump cylinder is double acting, with hydraulic pressure both ways. The bucket has a 10 ft. 2 in. clearance, and will reach a maximum of 56 in. in front of the tractor.

Massey-Ferguson Industrial Division, 1009 S. West St., Wichita, Kan. 67201

For more details circle 120 on Enclosed Return Postal Card.

### Aggregate Dryers

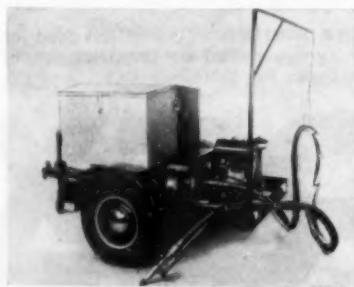
New aggregate dryers claimed to increase operating economy and efficiency have been announced by Bollard Asphalt Division. The new dryers, with cold elevators, burners, fans and dust collectors as optional equipment, are available as replacement units for existing plants in addition to their construction for completely new asphalt plants. Equipped for either gas or oil firing or in combination, the dryers are built in capacities of 80 to 240 tons per hour and range from 75-in. diameter and 24 ft. in length through seven standard intermediate sizes to 108-in. diameter and 35 ft. in length.

Bollard Asphalt Division, The Colonial Iron Works, 17625 St. Clair Ave., Cleveland 10, Ohio.

For more details circle 121 on Enclosed Return Postal Card.

### Sealant Applicator

The Allied Stroud Corporation has presented a compact application unit for placing of 2-component, cold-applied concrete joint sealant. Specifically designed for application of Allied Materials Corporation's "Jet Seal," the equipment has separate vats for the two components which can be filled while the machine is in continuous operation, thus eliminating, it is said, shut-down for mixing or applicator change-over. The applicator itself, containing the patented Allied extrusion



**Sealant Applicator**

nozzle, is light and designed for maximum working ease, according to the manufacturer.

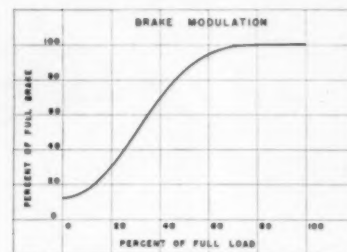
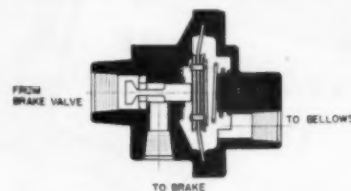
The material is contained in 5-gal. pails, while the unit itself is self-contained and compact.

Allied Stroud Corporation, Stroud, Okla.

For more details circle 122 on Enclosed Return Postal Card.

### Air Suspension Brake

A truck safety brake development on two new GMC truck models, made possible through the use of air suspension, has been announced by the GMC Truck and Coach division. The new device, known as the modulated brake, permits the highway tractor to approach minimum stopping distance under all load conditions, it is claimed. Air suspension permits the addition of



brake regulating valve which automatically adjusts the braking effort at the rear wheels in proportion to the load on the wheels.

The two new GMC highway tractors carrying the modulated brakes are the DLR8000 and the DFR8000, aluminum tilt-cab Diesel models.

GMC Truck and Coach Division, General Motors Corp., 660 South Blvd., East, Pontiac 11, Mich.

For more details circle 123 on Enclosed Return Postal Card.

### Plow and Broom

A new piece of equipment designed especially for use in ice and snow belts, introduced by Lull Engineering Co., incorporates a reversible combination snow plow and roll-over broom mounted ahead of the truck. Called the Model S-40, it is used with four wheel drive trucks.

The snowplow and roll-over broom combination can be used for removal of snow and sleet, with the plow handling snow and the sweeper taking care





**Lull Plow-Broom**

of water, slush, and sleet. The operator can angle the plow to 32 deg. in either direction and can change the blade angle during operation. For sweeping, the broom is hydraulically "rolled up-and-over" into working position in front of the plow. The broom can also be angled to 32 deg. in either direction while operating at speeds from 8 to 15 miles per hour.

**Lull Engineering Co., 3045 Highway 13, St. Paul, Minn.**

For more details circle 124 on Enclosed Return Postal Card.

### Water Repellent

A water soluble silicone water repellent to protect concrete surfaces on highways and bridges has been introduced by Silicones Division, Union Carbide Corporation. Called "Union Carbide" XR-20 silicone, it is shipped as a 20 percent silicone concentrate and can be readily made into a 2 percent ready-to-use solution by mixing 11 parts of water to one gallon of XR-20.

The product is being marketed, it is said, to meet the growing demand on the part of highway officials, contractors, and applicators for a water soluble material. It is based on a "salt polymer" rather than a resin, and may be applied directly to the concrete after it has dried.

**Silicones Division, Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.**

For more details circle 125 on Enclosed Return Postal Card.

### 4-Cyl. Power Units

Allis-Chalmers Manufacturing Co. has announced two new 4-cyl. power units, the G-149 and G-226. The 149 cu. in. G-149 gasoline power unit develops 4 bhp at 2,000 rpm; the 226 cu. in. G-226 develops 67 bhp at 1,800 rpm. Both are water-cooled, valve-in-head engines with replaceable wet-type cylinder sleeves. Maximum power and fuel economy is claimed by controlled combustion within the chamber formed by crater-shaped pistons. This design causes thorough mixing of the air-fuel charge for complete combustion.

**Allis Chalmers Mfg. Co., Tractor Group, Milwaukee, Wis.**

For more details circle 126 on Enclosed Return Postal Card.



## They Only Look Expensive!

■ **PATH** surveying instruments—now introduced for the first time throughout this country by Bruning—not only look expensive but they outperform many higher priced instruments.

They have been added to the famous Bruning optical line because they offer one of the rarest surveying values available. They have been thoroughly tested and evaluated by experts in the surveying field.

The optics in **PATH** instruments are unsurpassed by any instrument in any price range! Japanese lenses, now recognized as among the finest in the world, provide superior

definition, distinct and powerful magnification, unwavering accuracy. The instruments are built of the finest materials available under extremely high quality control standards. They have proved their dependability under extreme field conditions of heat, cold, and dust.

Bruning offers a complete line of **PATH** instruments, each with a handsome, sturdy wood carrying case equipped with adjustment tools, a plumb bob, magnifying glass, and sunshade. You'd be proud to own one, pleased with its performance, and delighted with its low price! Why not mail the coupon, right now?

# PATH

## Surveying Instruments

Now Distributed By

### BRUNING

Bruning offers both **PATH** and **BRUNSON** surveying instruments—highest quality products available in their price ranges.

**Charles Bruning Company, Inc., Dept. 3-GG  
1800 Central Road, Mount Prospect, Ill.  
Offices in Principal U.S. Cities**

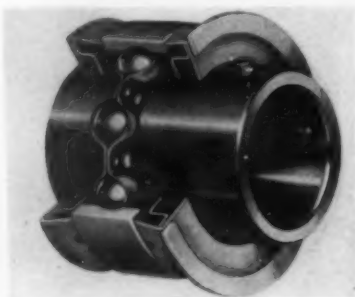
Please send me specifications and prices for your new line of **PATH** surveying instruments.

Name \_\_\_\_\_ Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ County \_\_\_\_\_ State \_\_\_\_\_

... for more details circle 288 on enclosed return postal card

## Machine Bearings

New machine unit bearings, introduced by Hoover Ball and Bearing Company, are said to be designed for light loads at normal speeds. The unit includes a single row bearing of deep-groove design with extended inner ring, equipped with two set screws for locking the bearing on its shaft. Separable seals may be used either singly



Hoover Bearings

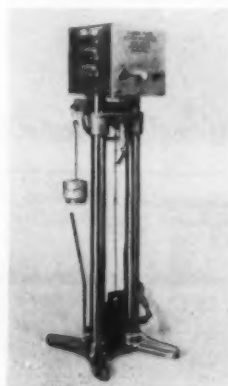
or on both sides of bearing. A wire lock ring holds the entire unit securely in its straight bore housing. Bearings are available in shaft sizes from 1/2 in. through 1 3/16 in.

Hoover Ball and Bearing Co., 5400 S. State Road, Ann Arbor, Mich.

For more details circle 127 on Enclosed Return Postal Card.

## Viscosity Tester

This sliding plate microviscometer for determining asphalt viscosity and durability will determine in absolute units and is suitable for penetration grade asphalts, liquid asphalts and other viscous materials. It has a range of 100 to 100 billion poises, thus permitting, at freezing temperatures, the measuring of the viscosity of all products from Grade 1 liquid asphalts to 40/50 penetration paving asphalts. At 77 deg. F. the range is from Grade 3 liquid asphalts to zero penetration



Microviscometer

paving asphalts. Since the shear rate may be accurately determined, it is equally applicable to materials having Newtonian or non-Newtonian flow properties. The microviscometer is designed for operation in constant-temperature water baths normally used for testing asphaltic materials.

Hallikainen Instruments, 1341 Seventh St., Berkeley 10, Calif.

For more details circle 128 on Enclosed Return Postal Card.

## Cabs for Traxcavators

Three new cabs for Caterpillar Traxcavators, Nos. 977, 955 and 933, have been announced by Crenlo, Inc. All body panels are of 12-gauge steel, and 16-gauge material is used in the double-walled doors. All cab mounting brackets are heavy duty 1/4-in. plate, and liberal use is made of weldments for strength without excessive weight.



Crenlo Cab on Traxcavator

Windows provide a clear view of operating area, and windshields are vertically mounted to minimize collection of dust on glass. All starting operations can be performed from the operator's seat.

Crenlo, Inc., 1429 3rd Ave., NW, Rochester, Minn.

For more details circle 129 on Enclosed Return Postal Card.

## Tension Lock Pin

General Metals Corp., through its Village Blacksmith division, has introduced a new type of tension lock pin to be used in conjunction with its "Drag-on Tooth" points. The tertiary alloy used in the pins is said to produce



Lock Pin for Tooth Points

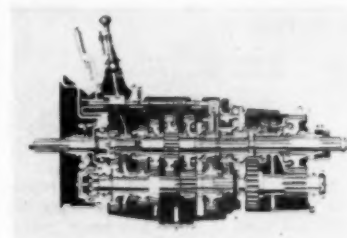
superior physical characteristics, thus reducing breakage under heavy impact. Points are available for shovels, loaders, rippers, draglines, dozers, trenchers, hoes, scarifiers and clamshells.

Village Blacksmith Division, General Metals Corp., Watertown, Wis.

For more details circle 130 on Enclosed Return Postal Card.

## Heavy Duty Transmission

Fuller Manufacturing Co. has announced production of a new heavy duty, semi-automatic transmission designed specifically for big earth-moving and construction equipment. Called the R-1160 Roadranger and engineered for tractors and trucks equipped with engines of up to 1160 cu. in. piston displacement, the new transmission is



New Fuller Transmission

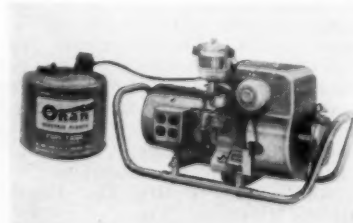
designed to handle up to 800 lb./ft. of engine torque, according to the company. It is said to offer quick, easy shifts because steps between ratios average only 37 percent. One shift lever controls all nine forward and two reverse speeds, with range shifts pre-selected and synchronized.

Fuller Manufacturing Co., 1419 N. Pitcher St., Kalamazoo, Mich.

For more details circle 131 on Enclosed Return Postal Card.

## Electric Plant

A new lightweight 2500 watt electric plant, announced by D. W. Onan & Sons, Inc., is specifically designed for a dual role: portable and emergency standby. Both Model 205J-1P/1430 (contractors model) and Model 205AJ-1M/1430 (standby model) are identical in weight (140 lb.) and size with the exception that the contractors unit is equipped with an aluminum carry-



Onan Plant, Contractors Model

ing frame, making overall dimensions (approx. 24 in. long, 15½ in. wide and 19 in. high) slightly larger.

Each plant is equipped with a separate 5-gal. fuel tank with rain-tight cap. Prime mover for the plant is the single-cylinder, 4-cycle, air-cooled, Onan-built, Model "AJ" engine.

D. W. Onan & Sons, Inc., 2515 University Ave. S.E., Minneapolis, Minn.

For more details circle 132 on Enclosed Return Postal Card.

## Rip-Rap Bucket

Yaun Manufacturing Co., Inc., maker of materials handling buckets, announces the addition of three new models, rip-rap, scrap iron and pulp-wood buckets, to its product line. Yaun's new "Orange Peel" rip-rap



Yaun Rip-rap Bucket

bucket is built in sizes from ½ to 2 cu. yd. Larger buckets in a heavy duty line are built on customer request for special applications. The ½-yd bucket weighs approximately 2,000 lb., and the 2-yd. bucket approximately 12,000 lb.

Yaun Mfg. Co., Baton Rouge, La.

For more details circle 133 on Enclosed Return Postal Card.

## "Tri-Pactor" Roller

Seaman-Gunnison Corp. announces three compaction techniques combined in the new, self-propelled "Tri-Pactor", model 7-19 TRI. They are pneumatic compaction, smooth steel rolling, and heavy-impact vibratory compaction. Ballasted weight adjustable from 7 tons empty to 19 tons fully loaded. Load-



Seaman-Gunnison "Tri-Pactor"

ing intensity hydraulically controlled up to equivalent of 50 ton surface pressure rating. At the shift of a hydraulic lever, operator can select any one or combination of techniques for fast, high speed compaction. The manufacturer states that fast multi-compaction combined in a single machine produces densities of 100 percent plus, with savings claimed in excess of 50 percent in equipment and operation cost.

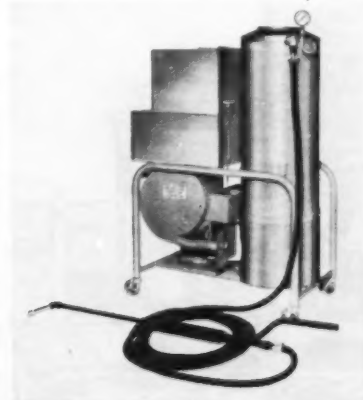
Seaman-Gunnison Corp., 2763 S. 27th Street, Milwaukee 15, Wis.

For more details circle 134 on Enclosed Return Postal Card.

## Steam Cleaner

A new, simplified, low priced steam cleaner, the Handy Dandy, has been announced by Malsbary Mfg. Co. It is offered in two models: oil fired with castor mounting or gas-fired for stationary installation.

The machine delivers 80 gal. of solution hourly at the same 60-100 lb. cleaning pressure as larger Malsbary



Oil-Fired Handy Dandy

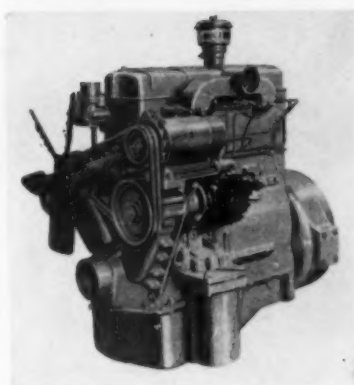
steam vapor cleaners. It also has the same type orifice-in-nozzle to assure a hard-hitting, straight-ahead cleaning stream with a minimum of fogging. Air atomizing burner assures complete combustion of fuel. Operator regulates cleaning stream simply by setting burner control to pressure desired.

Malsbary Mfg. Co., 845 92nd Ave., Oakland 3, Calif.

For more details circle 135 on Enclosed Return Postal Card.

## Diesel Engines

Two new diesel engines, the 70 hp J-70 and the 80 hp J-80 have been introduced by Cummins Engine Co., Inc. They are designed, it is said, to bring the benefits of diesel engine economy to equipment previously powered by gasoline engines. The engines are four cycle, naturally aspirated models of 4 1/8 in. by 5 in. bore and stroke with 267 cu. in. piston displacement. The J-80



New Cummins Diesel

develops its rated horsepower at 2500 rpm while the J-70 is rated at 2000 rpm.

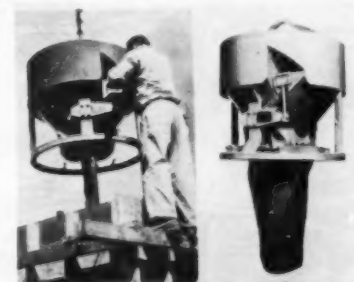
Each of these new engines has five main bearings of 3 3/8 in. diameter. They have extra large 2 5/8 in. diameter connecting rod journals, 1 1/2 in. diameter piston pins and five camshaft bearings.

Cummins Engine Co., Inc. Columbus, Ind.

For more details circle 136 on Enclosed Return Postal Card.

## Concrete Bucket

A new lightweight concrete bucket, available in 1/2, 3/4, 1, 1 1/2 or 2 cu. yd. sizes, is now in production at C. S. Johnson Co. The new bucket has been designed with all working parts above the discharge point and well within the bucket outline to protect them from falling materials and accidental impact. Features include an all-



Lightweight Concrete Bucket

welded steel frame and hopper, also a 50-deg. slope of the cone-shaped bucket to assure complete discharge of medium slump concrete. The geared handle that operates the gate assembly is claimed to provide ample leverage with a short stroke, and permit one-hand operation.

C. S. Johnson Co., P.O. Box 71, Champaign, Ill.

For more details circle 137 on Enclosed Return Postal Card.

(Continued on page 165)

# ASPH



**3500 ARMOUR ADHESION TESTS RESULT IN**





# AL

## OWER TREATMENT COSTS!

New  
Armour Redicotes®  
are effective on  
wet stone  
at concentrations  
as low as 0.2%

Admitted: asphalt adhesion agents are an extra expense.

*But look what Redicotes assure you:* complete coating in damp and wet weather; initial and continued adhesion; less down-time for machinery and manpower; extra assurance that you'll meet tight schedules.

Armour selected its additives and lowered treatment costs by exhaustive testing. Many asphalts, aggregates and competitive additives were tested for compliance with state specifications. Various concentrations were tried. The effect of time and temperature on storage of treated asphalts was studied.

**Result:** Armour now offers you Redicotes that are effective at concentrations lower than ever before!

... for more details circle 279 on enclosed return postal card



Asphalt supplier—West Bank Oil Terminal, Inc.  
Treatment—West Bank's "Westolized Rode-Rite"

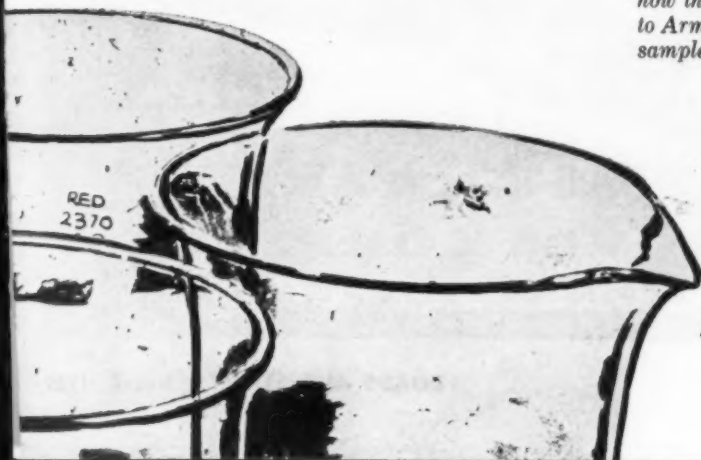
*Armour Chemicals for asphalt used in Philadelphia.* Armour chemicals have been used in conjunction with the "Rode-Rite" Inverted Emulsified Asphalts in Philadelphia for a number of years. This combination gives an ideal material that's durable under adverse weather conditions. This photo taken in February, 1958, on Philadelphia's West River Drive shows how well this combination of "Rode-Rite" and basic Armour chemicals has held up after 2 years of repeated river-flooding and traffic as heavy as 10,000 cars per hour.

### Here's what Armour offers you

- Choice of 4 tailor-made Redicote asphalt adhesion agents.
- Redicotes that have passed the following state tests: Delaware, Colorado, Kansas, Montana, Ohio, Pennsylvania and Vermont.
- Chemical raw materials for making your own adhesion agents—with all starting formulation data.
- Experienced up-to-date technical service.
- A guarantee that Armour Redicotes reach you as specified. Every batch is tested at every stage of manufacturing, with a final adhesion test before shipping.
- Fast, dependable delivery service from strategically located warehouse stock at Chicago; Houston; San Francisco; Los Angeles; Lodi, New Jersey.

**Save time and money** when checking your finished treated asphalt. Now Armour offers an analytical method for quickly determining percentage of additive in your asphalt.

*No matter what your application for asphalt, find out how these economical additives can work for you. Talk to Armour's chemical specialists. Write or call today for samples and a copy of the Redicote booklet.*



Leader in Progressive Fatty Acid Chemistry  
**ARMOUR CHEMICAL DIVISION**  
1355 West 31st Street • Chicago 9, Illinois  
©Armour and Company



## *for all types of* **MATERIAL HANDLING**

UNIT is versatile... designed to "put out" and "stand up" for loading and unloading jobs, stockpiling,

charging hoppers and feeding conveyors. Move it close to the work area. It performs just as well

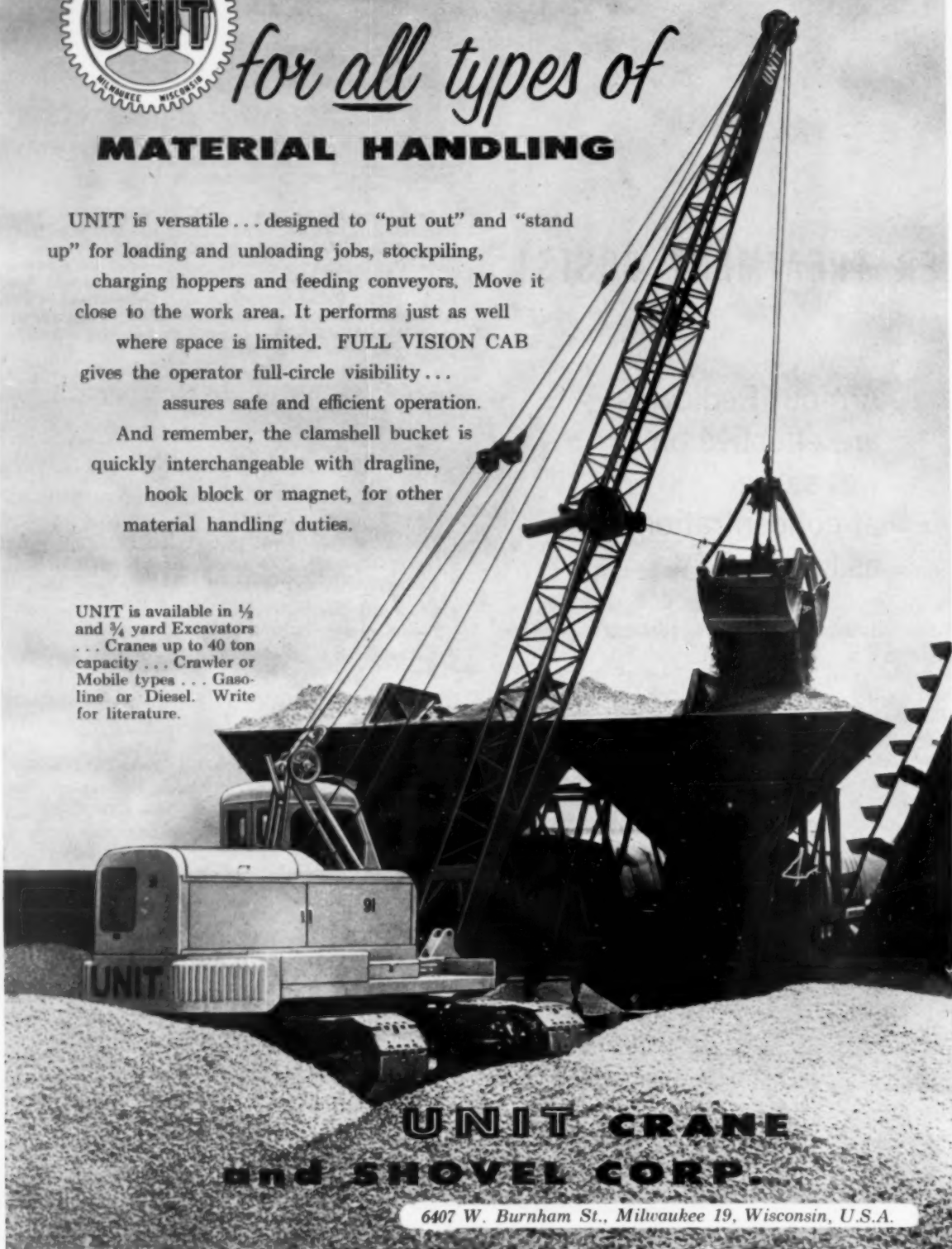
where space is limited. **FULL VISION CAB** gives the operator full-circle visibility...

assures safe and efficient operation.

And remember, the clamshell bucket is quickly interchangeable with dragline,

hook block or magnet, for other material handling duties.

UNIT is available in  $\frac{1}{2}$  and  $\frac{3}{4}$  yard Excavators ... Cranes up to 40 ton capacity ... Crawler or Mobile types ... Gasoline or Diesel. Write for literature.



# **UNIT CRANE and SHOVEL CORP.**

6407 W. Burnham St., Milwaukee 19, Wisconsin, U.S.A.

... for more details circle 382 on enclosed return postal card

**How 15¼ ton impact every 1.7 lineal inches often exceeds Proctor tests on base and fill**



The BROS Model VP-9 Vibra-Pactor "thumps" soil and aggregate particles into a tightly consolidated mass.

With high *static* weight and low 1100-1300 VPM vibrating frequency, the Vibra-Pactor can produce densities in difficult base and grade materials as well as graded or select materials.

The combined 9,850 lbs. *static* weight of the roller and controlled variable *dynamic* loading forces produce 10½ to 15¼ tons of compactive effort every 1.7 lineal inches at 2 MPH.

Compactive forces are distributed vertically *plus* obliquely because the Vibra-Pactor employs a *single* off-center weight system to produce vibratory

action. This surrounds soil particles with motion reducing friction most efficiently and permitting higher and faster densities.

Vertical belt drive from rotor to jack shaft eliminates changing drive-line centers, providing rated RPM even in softest fill materials. Remote control push button switch for roller engine allows operator to control it from tractor.

Other important design features include rugged BROS construction throughout to provide maximum performance and minimum service.

Your BROS Dealer can rule out a lot of your compaction equipment problems this year, so see him about your next job needs.



Write for the new revised edition of the 52-page Bros compaction manual

**BROS Incorporated**

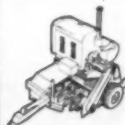
ROAD MACHINERY DIVISION  
1057 Tenth Ave. S.E., Minneapolis 14, Minnesota



SHEEPSFOOT  
TAMPERS



ROLL-O-PACTOR



PREPARATOR



30-TON SELF-  
PROPELLED ROLLER



9-TON SELF-  
PROPELLED ROLLER



9 AND 13-TON  
ROLLERS

# Chevy power is tough—

*and proves it on bruising  
off-the-road hauls!*



*That Series 100 Chevy tandem above takes a terrific pounding as it hauls huge loads of gravel or fill dirt into the heart of California's redwood country. It goes miles off the road, makes up to 24 trips a day through rocky forest land. Yet owner Bernard Conti, of the Conti Sand & Gravel Company, reports only one hour of downtime in 20,000 miles on this truck-killing road construction job. And Chevy's tough power gets the truck through faster, Mr. Conti says; assures more trips—more profits—per day!*

Hauling outsized loads of fill dirt through California's forests calls for a heavy-duty truck that's rock-rugged and powerful as they come; one that's soundly built down to the last bolt. And the Conti Sand & Gravel Company bears witness to the fact that Chevrolet is just such a truck. They're completely satisfied with their Series 100 model, from the dependable pulling power of the big 230-h.p. Workmaster V8 to the work-whipping qualities of the tough-built chassis components. And you'll be equally satisfied with whichever

Chevy heavyweight or middleweight *your* work requires!

Mr. Conti indicates that Chevrolet's Powermatic\* transmission is of special importance in this rugged service. It helps him to bull through the tough spots with exceptional ease. This fully automatic 6-speed transmission virtually eliminates manual gearshifting! It also provides a Hydraulic Retarder that helps you control truck speed and saves wear on the service brakes.

*\*Optional at extra cost, Series 50, 60, 70, 80, 90 and 100 models.*

## No job's too tough for a

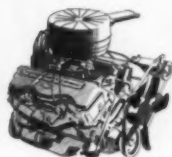




## Chevy's powered to cut costs and keep going on your tough off-the-road hauls!

That's for *sure*, whether you use mighty middleweights or high-capacity heavyweights—whether you prefer V8's or 6's.

Take Chevrolet's 1959 big-truck V8's, for example. As indicated by that tough truck job pictured above, these modern engines are out to whip any work that comes their way. They've got what it takes to do it. The *shortest piston stroke* of any comparable truck V8's: a sure sign of more work on less fuel. Compact design that cuts down on truck weight and helps assure the biggest possible payloads. Scores of up-to-the-minute features that know how to trim overhead: full-flow oil filter, hydraulic valve lifters, hard-faced exhaust valves and hardened valve seats,



extreme-duty Moraine 400 bearings, rotor-controlled governor, overspeed warning light and many more.

And with a *complete* lineup of modern V8 powerplants—including 160-h.p. Trademaster, 160-h.p. HD Taskmaster, 175-h.p. HD Super Taskmaster, 185-h.p. Workmaster Special and 230-h.p. Workmaster—Chevy can match the engine to your work, ideally.



Or if you prefer 6's, Chevy's *still* your best bet. Standard in Series 40 models is the 135-h.p. Thriftmaster 6, better than ever for '59 with a new Economy-Contoured camshaft that improves gas economy by 10%!

And in Series 60 there's a new edition of the 150-h.p. Jobmaster 6. It offers new durability stemming from new tougher built pistons and Stellite-faced exhaust valves. Both of these famous 6's provide plenty of hard-pulling torque.

Six or V8, you'll go a long way before you see the likes of this '59 Chevy engine lineup. Actually, there's only one *best place* to go for all your trucking needs—and that's to your Chevrolet dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

# Chevrolet truck!



... for more details circle 328 on enclosed return postal card

ROADS AND STREETS, March, 1959

# 10 minutes for complete pump overhaul...

why put up with expensive down time and high repair costs?



on the spot maintenance with



"High Performance" Pumps\* keeps your jobs on schedule

\*PATS. & PATS. PENDING

Without removing the pump from the vehicle, and without disconnecting hydraulic lines, the new Vickers "High Performance" pump can be completely overhauled by simply inserting a new pumping cartridge. The pumping cartridge contains all wearing parts in one replaceable unit and results in new pump performance. Write for Bulletin No. M5108 for performance characteristics.

2 min

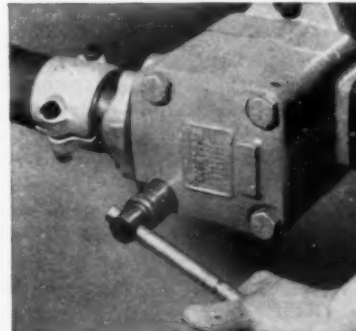
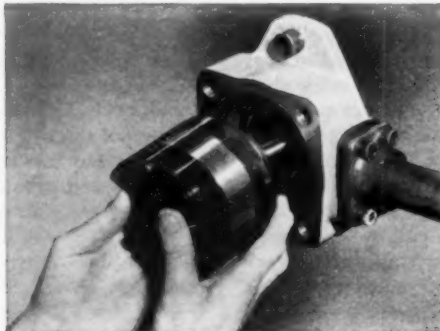
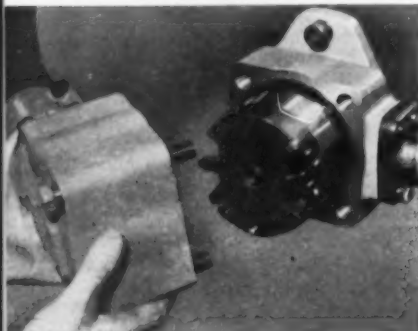
1. After safety, cleanliness and draining instructions have been followed per vehicle manufacturer's recommendations, take out four cover bolts and remove cover.

5 min

2. Take out old pump cartridge and insert new one. The cartridge includes cam ring, rotor, vanes, etc. —all parts in one assembly.

10 min

3. Replace cover and you have the equivalent of a new pump ready for long, trouble-free service.



8212

## VICKERS INCORPORATED

DIVISION OF SPERRY RAND CORPORATION

Mobile Hydraulics Division

ADMINISTRATIVE and ENGINEERING CENTER  
Department 1432 • Detroit 32, Michigan

Application Engineering Offices: • ATLANTA • CHICAGO • CINCINNATI  
CLEVELAND • DETROIT • GRAND RAPIDS • HOUSTON • LOS ANGELES  
AREA (El Segundo) • MINNEAPOLIS • NEW YORK AREA (Springfield, N.J.)  
PHILADELPHIA AREA (Media) • PITTSBURGH AREA (Mt. Lebanon)  
PORTLAND, ORE. • ROCHESTER • SAN FRANCISCO AREA (Berkeley)  
SEATTLE • ST. LOUIS • TULSA

ALSO SOLD AND SERVICED IN AUSTRALIA, ENGLAND, GERMANY & JAPAN  
IN CANADA: Vickers-Sperry of Canada, Ltd., Toronto, Montreal & Vancouver

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

... for more details circle 385 on enclosed return postal card

## New Products

(Continued from page 157)

### Two New Stabilizers

To provide more accurate proportioning and control of base materials, and to give large capacity operation with minimum costs, Hetherington & Berner has developed two new stabilizers that give up to 400 cu. yd. per hour.

Both of these new stabilizers have individual units operated by electric



H. & B. Stabilizer

drives. Because of these individual drives, the feed of aggregate, cement, and water can be started and stopped simultaneously by the use of a single push button, thus insuring that uniform proportions of the materials will be fed to the mixer at all times, even when the operation is started and stopped frequently.

The feeder, mixer and aggregate conveyor are wheel mounted, to operate in running position without jacking up or cribbing. The feeder is equipped to proportion two sizes of aggregate onto the belt, and to handle up to 300 cu. yd. per hour of each material.

Hetherington & Berner, Inc., 701-745 Kentucky Ave., Indianapolis, Indiana.

For more details circle 138 on Enclosed Return Postal Card.

### Ice, Snow Equipment

The Lull Engineering Company has introduced the "Ice, Packed Snow and Sleet Fighter," designed to complete the equipment needed for ice, sleet and snow removal by airports, highway and street departments. Called the Model S-300, it is used with 4-wheel drive trucks and includes a hydraulically controlled ice roller-crusher and ice blade mounted under the chassis of the truck



Lull Snow Fighter

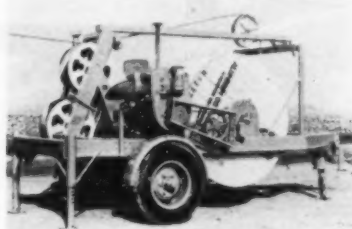
and a 10 ft. wide, 5 ft. diameter "Super Sweeper" mounted ahead of the truck. Electric solenoid controls actuate all the movements of the hydraulically operated equipment on the truck, with finger-tip control panel mounted on the dash of the cab.

Lull Engineering Company, 3045 Highway 13, St. Paul, Minn.

For more details circle 139 on Enclosed Return Postal Card.

### Cable Puller

The Pengo model 5500 bull wheel cable puller, designed for use in conjunction with any one of a number of models of Pengo tensioners, has been announced by the Petersen Engineering Co., Inc. The new Pengo puller is a complete pulling unit consisting of a pair of 26 in. diameter neoprene lined bull wheels that pull any kind of pulling line up to 1 1/4 in. diameter manila



Pengo Puller

rope. It carries its own reel onto which the pulling line is wound after it is pulled in. Especially designed for distribution work, this unit is provided with its own power plant consisting of a 30 hp engine and is designed for pulling tensions up to 1,700 lb. at 3 mph, or 3,100 lb. in low gear.

Petersen Engineering Co., Inc., Santa Clara, Calif.

For more details circle 140 on Enclosed Return Postal Card.

### Ripper Tooth

To further increase the versatility of its No. 9 ripper, Caterpillar has added a new curved-shank ripper tooth to its line of optional equipment. The new tooth, curved at a slight angle, is stated to virtually eliminate rock drag and slabbing. Since it has the ability to shed broken rock better, the new curved shank is able to pass through tough, resistant material more easily, doing away with delays formerly required to clear the tooth of bunched-up material.

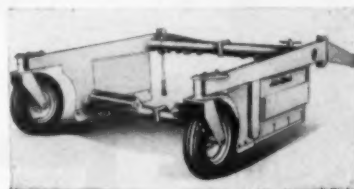
Three ripping positions are available with the new curved tooth, providing angles of entry smaller than those available with the previous curved tooth (entry angles vary with the ripping position).

Caterpillar Tractor Co., Peoria, Ill.

For more details circle 141 on Enclosed Return Postal Card.

### Base Spreader

The new John Ulrich U-100 base spreader attaches in minutes to any Caterpillar D8, D7 or D6 track-type tractor. Push fork arms slip onto its trunnions and are secured by one bolt on each side. The dozer blade serves as the strike-off. Spreader box is secured to the dozer blade by wing-nut clamps.



New U-100 Base Spreader

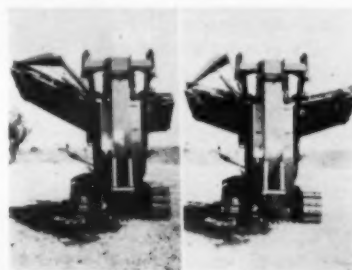
Fast, accurate spreading in lifts from 1 in. to 20 in. is claimed. Angle push fork arms provide maximum blade lift assuring full depth of spread. Width of spreads can be varied from 8 ft. to 16 ft. Full depth doors control spread width and are stated to assure even material flow without spillage. Replaceable, 8-in. strike-off blades adjust to control edge of spread material.

Ulmac Equipment Co., Inc., El Paso, Illinois.

For more details circle 142 on Enclosed Return Postal Card.

### Trencher With Conveyor

The Cleveland 240 trencher is now equipped with a 12 x 2 1/2 ft. power-shifted, power-folded, V-shaped conveyor. Both shifting and folding are lever-controlled at the operator's seat. The V-shaped conveyor provides a constant elevating angle for faster, higher spoil discharge and reduces rolling and tumbling of spoil. It also provides maxi-



240 Trencher Power Shifted, Left, Centered at Right.

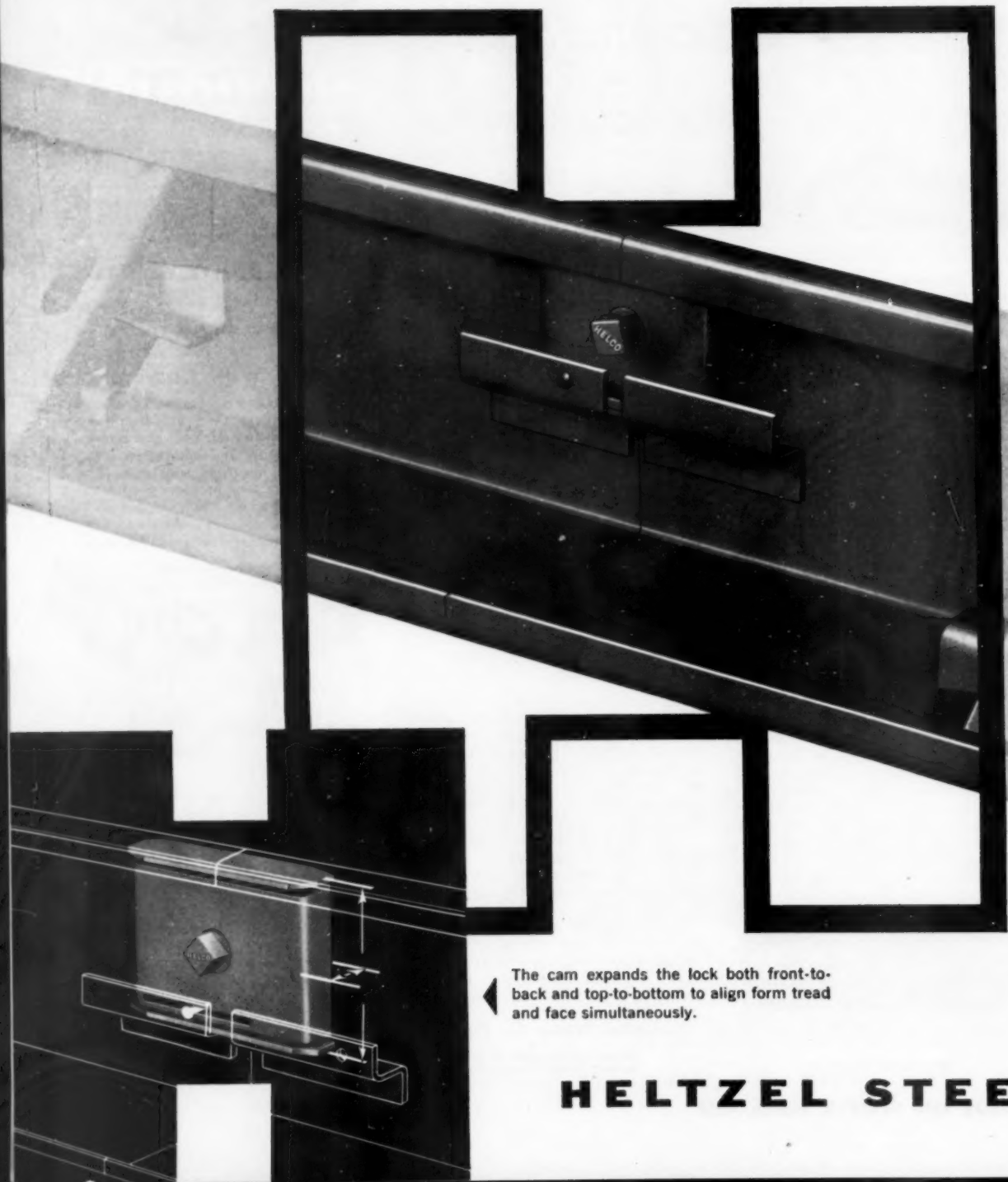
mum clearance under the digging wheel rims, accommodating higher heaped loads without clogging. Controls for the hydraulic shifting, positioning and folding of the conveyor are located at the operator's seat.

Cleveland Trencher Co., c/o Meerman's Inc., 1924 N.B.C. Bldg., Cleveland 14, Ohio

For more details circle 143 on Enclosed Return Postal Card.

(Continued on page 171)

# HELTZEL'S NEW *\*Cam-Lok*



◀ The cam expands the lock both front-to-back and top-to-bottom to align form tread and face simultaneously.

**HELTZEL STEEL**



# STEEL FORMS!

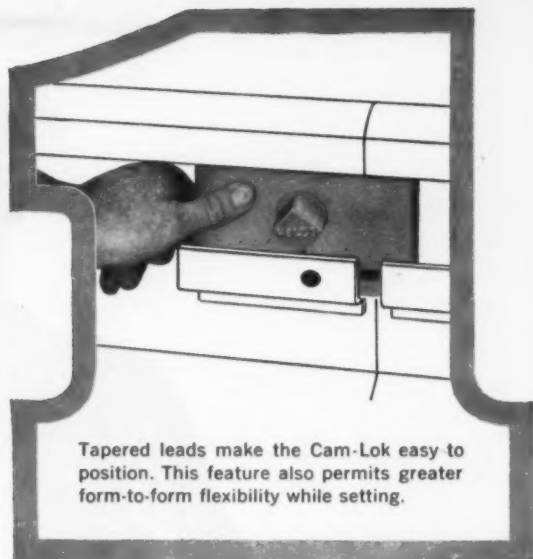
From steel form headquarters—revolutionary new highway forms that go together with absolutely rigid straight-line joints . . . faster, easier than ever before! They're HELTZEL'S NEW \*CAM-LOK STEEL FORMS!

Sturdily constructed on a simple cam principle, the new Cam-Lok slides easily into position. A fast quarter turn of the cam draws the treads of both form sections into alignment—with a joint that can't shake loose regardless of the vertical thrust of the machine weight or the horizontal thrust of spreader and finisher. An open end wrench is the only tool needed. There's no sledging with resulting tread and lock damage—no chance for misadjustment, and the simple cam mechanism is positively non-fouling!

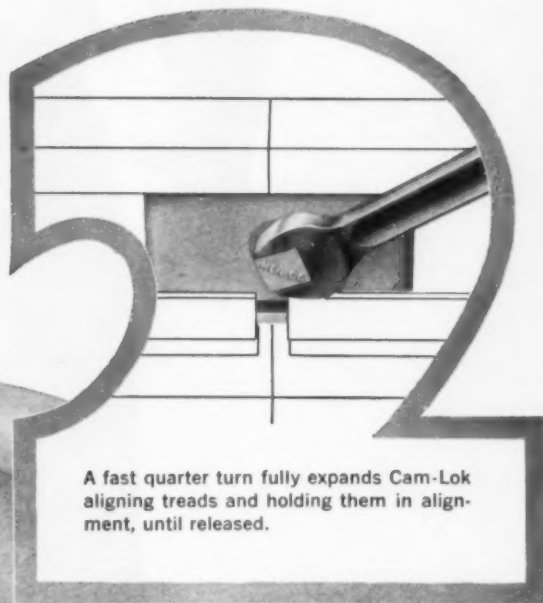
There's more to these new Cam-Lok forms. Full channel stake pockets with angular wedges are stronger and insure better stake retention. They're available in the single or double wedge type with or without upturned flange base. Cam-Lok Highway Forms have a cambered base end and are available for radii forming.

AIRPORT FORMS, too, now come equipped with the fast setting, self-aligning new Cam-Lok. You'll want to know more about this great new idea in highway and airport forms. Write today for your copy of the Heltzel Cam-Lok Bulletin.

\* Patent Pending



Tapered leads make the Cam-Lok easy to position. This feature also permits greater form-to-form flexibility while setting.



A fast quarter turn fully expands Cam-Lok aligning treads and holding them in alignment, until released.

## FORM AND IRON COMPANY WARREN, OHIO

... for more details circle 397 on enclosed return postal card



THIS IS

6583

# THE IMAGE OF CF&I ...MAKER OF STEEL

He's a giant steelman. He makes good steel and steel products for the diversified needs of today's economy. He anticipates tomorrow's requirements. He is constantly improving products through research and new manufacturing techniques.

His steel mills extend across the country. In them, he guards every step of manufacturing by rigid quality controls. And in his national network of offices and warehouses, he not only *sells* steel products, but he *serves* their users in every possible way.

He is the dynamic image of CF&I . . . the symbol of dependable steel products. Look for him when you buy.

**Plants at:**

Pueblo, Colorado • Oakland and South San Francisco, California  
Buffalo, New York • Claymont, Delaware • Palmer, Massachusetts  
Birdsboro, Pennsylvania • Roebling, New Jersey • Trenton, New Jersey  
40 Warehouses and 60 Sales offices located coast to coast

**THE COLORADO FUEL AND IRON CORPORATION**

DENVER • OAKLAND • NEW YORK

. . . for more details circle 309 on enclosed return postal card

**ROADS AND STREETS, March, 1959**





Complete 180 - 200 T.P.H. Plant with Diesel Drive Mounts at Grade with Slab Foundations.

Bollard Stationary and Semi-Portable Asphalt Plants, in sizes of 90 to 200 T.P.H., incorporate many exclusive features that step up production, minimize down-time, lower overall costs.

Bollard Plants, designed to specific requirements owe their superiority to forty-one years' experience in the design and fabrication of the finest bituminous mixing plants.

Compare these Bollard features that add up to greater production and profits—

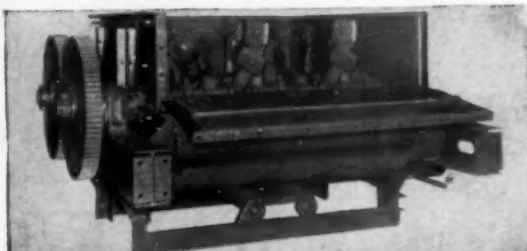
**DRYERS:** 75"-108" diameter. Staggered flights in drum for better cascading action of material, more efficient exposure to heat. Supports to grade eliminate concrete piers. Combustion chamber, extending inside of shell, prevents distortion. Heavy duty chain and sprocket drive minimizes torque on dryer shell.

**TOWER:** Hot bin; 4 compartments; 60 to 100 tons total capacity. Hopper bottom equipped with fast opening clam shell-type gates. Weigh box permits loading of 10% greater than rated capacity of mixer.

**MIXERS:** 3000-6000 lbs. batch capacities. Patented design makes it possible to replace bolted, not riveted, liners easily and to adjust special long-lasting tips to 16 positions.

**CONTROLS:** All mixing operations air controlled through solenoid valves for automatic operation. Permits easy installation of Hardy-matic or other automatic control system.

**Only Bollard Plants  
offer Features like  
these for Higher  
Tonnage at Less Cost**



Improved Mixer Features Longer-Wearing Parts ... Easily Replaced When Necessary.



Section of Bollard Dryer with Trunnion Rollers (Total of Eight).

**AUXILIARY EQUIPMENT** includes mineral filler handling and dust collection equipment; coil-equipped storage tanks; jacketed asphalt piping; belt or bucket conveyors; pumps, heating by steam or hot oil.

A Bollard Engineer will be glad to discuss your asphalt plant problem with you. For information, write or phone collect.



**BOLLARD Asphalt Plant Division**

*The Colonial Iron Works Company*

17643 St. Clair Avenue

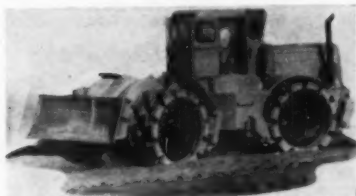
Cleveland 10, Ohio

... for more details circle 314 on enclosed return postal card



## New Products

(Continued from page 165)



Wagner Compactor-Dozer

### Compactor-Dozer

A new "Compactor-Dozer" for the road building industry, which will permit compacting and dozing at the same time, has been added to the line of 4-wheel drive tractors manufactured by Wagner Tractor, Inc. The main feature of the new machine is the air-cushioned steel compaction wheels which, according to the manufacturer, practically eliminates shock and vibration and add to operator comfort. Interchangeable rubber tire wheels are available for converting the tractor

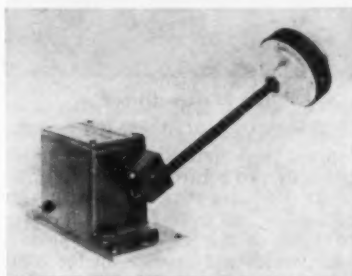
to an all-purpose prime mover and to other jobs, affording year-around use, it is said. Tilt and pitch of the heavy duty dozer blade are hydraulically controlled from the cab.

Wagner Tractor, Inc., P.O. Box 7444, Portland 20, Oregon.

For more details circle 144 on Enclosed Return Postal Card.

### Conveyor Belt Control

A new type load and motion sensor to start, stop or control sequencing of automatic conveyORIZED operations has been developed by The Johnson-March Corp. The new unit, called "Sentron," will signal any combination of conditions involving load or no-load, motion or no-motion of a conveyor belt. It can



Johnson-March Control

be used to stop other belts or equipment in case a conveyor slips or breaks; to indicate conveyor slippage or not running empty or loaded; and as a means of actuating other equipment based on a set of go-no-go conditions.

The Johnson-March Corp., c/o Beaumont, Heller & Sperling, Inc., Sixth and Walnut Streets, Reading, Pa.

For more details circle 145 on Enclosed Return Postal Card.

### Road Patching Material

A new all-weather outdoor patching material for chuck-holes, cracks and ruts in black top, concrete, brick, stone, even cinders, has been developed by The Monroe Co., Inc. ZOR-X can be applied in the winter months, quickly and economically, even if the surface is wet or the temperature as low as 15 deg. F. and sets immediately, according to the company. There are two grades, one for depressions less than 2-in. deep, one for holes more than 2-in. deep. The depression or crack has only to be filled with ZOR-X, then tamped. No prime coat is necessary, it is said.

The Monroe Co., Inc., 10707 Quebec Ave., Cleveland 6, Ohio.

For more details circle 146 on Enclosed Return Postal Card.

## ARROW MOBILE HYDRAULIC HAMMER

# AUTOMATIC • LOW COST

## CUTTING • BREAKING • TAMPING

The operator of the Arrow Mobile Hydraulic Hammer can set the hammer control upon **automatic** to deliver blows of uniform impact—or he can control the hammer manually. In addition, he can use the exclusive Arrow creeper-gear to move the machine at uniform speed up to 32 feet per minute. The machine can be driven over streets and highways under its own power up to 30 miles per hour.

**ONE MAN CAN DO THE WORK OF SIX**—All controls are hydraulic, and are conveniently located for operation from the comfortable, fatigue-reducing seat. A wide range of hammer points and tools, easily attached, makes the Arrow ready for a wide variety of jobs such as tamping backfill, cutting asphalt, breaking concrete, driving piles. One man and an Arrow can release for other work six or more men using conventional air-tools.



For complete information, call your Arrow Distributor or WRITE FACTORY FOR DESCRIPTIVE LITERATURE.



**ARROW MANUFACTURING CO.**  
194 West Dakota • Denver 9, Colorado

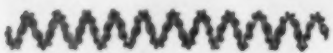
... for more details circle 283 on enclosed return postal card



Tower folds back to comply with any highway regulations

## Truck Tire Coils

A line of heavy-duty truck tire coils to meet the requirements of tires for off-the-road work and special service applications has been announced by Penetred Corporation. The company's  $\frac{3}{8}$  in. diameter coils are now being manufactured of heavier gauge steel wire which is said to add 20 percent to



Truck Tire Coil

the weight of the steel, increase strength by 20 percent and maintain the optimum ratio of steel to rubber. Standard  $\frac{3}{8}$  in. diameter will continue to be offered. The coil is made of two strands of specially formulated tempered steel wire, precision twisted and coiled.

Penetred Corporation, Marshfield, Wis.

For more details circle 147 on Enclosed Return Postal Card.

## Portable Plant

A portable batching plant offered by Ross Porta-Plant can be moved by two trucks and is said to be adaptable to any situation requiring portable concrete batching. The 6-yd. model has a 6x8-ft.,  $\frac{3}{16}$ -in. metal bin and three beam scales of 14,000, 10,000, and 10,000 lb. at 5-lb. integrals. The 4-yd. plant has a 6x6-ft. bin with 10,000, 8,000 and 3,000-lb. scales. Both plants offer a 35-ft. conveyor and 24-in., 4 ply rubber belts. Bin and conveyor are hauled as one pneumatic tired unit, while the cement silo is moved with one truck tractor.

Ross Porta-Plant, P.O. Box 446, Brownwood, Texas.

For more details circle 148 on Enclosed Return Postal Card.



The Ross Porta-Plant, above, with the bin being set up, at right.

## Litter Remover

A new litter remover developed by the Finn Equipment Company is towed by a light tractor or truck over the area to be cleaned and picks up all trash and debris including paper, tin cans, wood, leaves.

The "Litter Gitter" cleans an area 6 ft. wide at 5 to 10 mph. It uses a jet stream of air to dislodge and float the debris from the surface, taking it from this air stream to a storage bin by means of a propelling force. The unit's



The "Litter Gitter"

7 cu. yd. storage compartment is dumped hydraulically. The operator uses only two controls to hydraulically adjust the clearance of the pickup mechanism and to increase or decrease the force of the jet stream. The machine, which will operate on the comparatively rough terrain of the median strip and roadside, is mounted on 4 wheels with self-levelling axle, plus two dolly wheels to give a sharp turning radius.

Finn Equipment Co., 2525 Duck Creek, Cincinnati 8, Ohio

For more details circle 149 on Enclosed Return Postal Card.

## 1-Man Truck Unloader

The Elberfeld Mfg. Co., Inc., introduces its 1959 "Jiffy-Lift" 1-man operation loader and unloader which is claimed to handle 10,000 lb. with ease and afford ample depth of drop for all conditions. The unit features 4-wheel drive which reduces track slip-

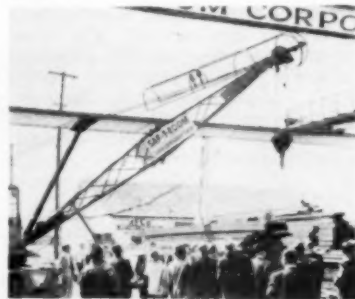
page and 4-cable suspension which is said to eliminate swinging. The supporting legs lock into position and give sturdy support regardless of terrain or conditions of ground. The device will handle concrete block, brick, stone, tile, pipe or precast concrete.

Elberfeld Mfg. Co., Inc., Elberfeld, Ind.

For more details circle 150 on Enclosed Return Postal Card.

## Power Line Shield

A safety device, "Saf-T-Boom," designed to protect crane booms from contact with overhead power lines, is a weather-proofed protective shield made of steel tubing. Four heavy duty insulators prevent the flow of electricity to the machine and workers when the device comes into contact with power lines. It has been field lab-



A Saf-T-Boom Demonstration

oratory tested with more than 50,000 volts without by-pass or leakage, according to the manufacturer, and is so designed as not to hamper the view of the operator or the efficient operation of the crane.

Saf-T-Boom Sales and Service Corp., c/o Largent Parks, 318 N. St. Paul St., Dallas, Texas.

For more details circle 151 on Enclosed Return Postal Card.



## Crane Safety Switch

A new addition to the Dillon Dyna-Switch line, announced by W. C. Dillon & Company, Inc., is said to offer protection against accidental overloading of hoists and cranes. This latest version now has sensitive control switches housed in a heavy metal junction box, with rain, dirt, moisture or dust thus effectively sealed out, according to the



New Dillon Dyna-Switch

manufacturer. The housing also accommodates spliced cable ends which are fed into this box through spring suspension cable fittings with locking collars. This arrangement is said to add to cable life and prevent entry of dirt or moisture at these points.

W. C. Dillon & Co., Inc., 14620 Keswick St., Van Nuys, Calif.

For more details circle 152 on Enclosed Return Postal Card.

## Bulk Cement Method

A new method for pneumatically handling bulk cement announced by Engineered Equipment, Inc., uses the new E/E system with which a 125 barrel truck can be unloaded in 30 to 35 minutes depending upon the height the cement must be raised. This new



New Bulk Cement Method

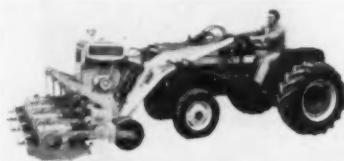
technique is claimed to eliminate maintenance problems common in elevators and screw conveyors. Pictured is a truck body fitted with complete accessories for pneumatically handling bulk cement by the E/E system.

Engineered Equipment, Inc., Waterloo, Iowa.

For more details circle 153 on Enclosed Return Postal Card.

## Tamper Attachment

A new Vibro-Tamper attachment, Model J-4, has been added to the line of The International Vibration Co. The new unit can be towed to or from the job site and can be quickly mounted on any standard make front-end loader or wheel tractor with loader attachment. It can also be pulled behind the loader or tractor



Vibro-Tamper Attachment

while working or compacting. It is self-contained and does not require any type of auxiliary power installation on the propelling tractor for its operation. The tractor is used only for moving the J-4 unit forward or backward over the material being compacted.

The International Vibration Co., 16702 Waterloo Road, Cleveland 10, Ohio.

For more details circle 154 on Enclosed Return Postal Card.

## Spanner Wrenches

A set of fully adjustable "Quik-Set" spanner wrenches, designed to facilitate the repair of hydraulic jacks and other equipment utilizing gland or packing nuts, has been marketed by the Hydraulic Jack Packing & Tool Co. The new spanner wrench set includes two chrome-plated wrenches



Spanner Wrenches

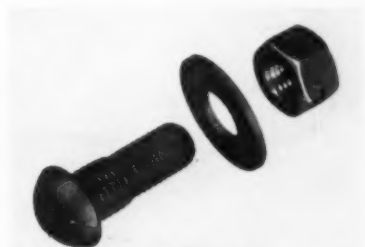
with adjustable spanner extensions and an additional set of offset extensions. The extensions permit easy removal and replacement of gland and packing nuts having either holes or slots.

Dept. 5-G, Hydraulic Jack Packing & Tool Co., P.O. Box 50, Bloomfield N.J.

For more details circle 155 on Enclosed Return Postal Card.

## High Strength Bolt

A new high strength bearing bolt featuring greater slip resistance has been developed and produced by Lamson and Sessions Co. The bolt bears knurls about the bolt shank to produce a body-bound fit in steel assembly work. The knurled bolt shank can be driven easily because of three design features:



Knurled Bolt

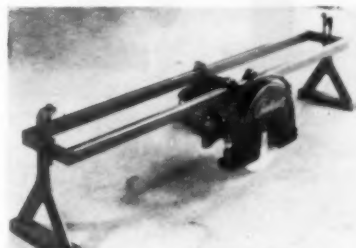
The frontal shape of each knurl is a section of a small ball; the back face is relieved somewhat like a drill or tap, which prevents packing of displaced metal to insure firm seating; and knurls are spiraled about the shank, based on the principle that turning reduces driving load. The bolt meets ASTM A-325 specifications.

National Distributor: United States Steel Supply Division, 208 S. LaSalle St., Chicago 90, Ill.

For more details circle 156 on Enclosed Return Postal Card.

## Stone Cutting Saw

A new stone cutting saw offered by Cardinal Engineering Corp. is powered by a 2 hp totally enclosed, fan cooled, ball bearing motor, will make cuts up to 6 ft. long on material up to 3 in. thick with a 14 in. diamond or abrasive blade, according to the manufac-



S-200 Cardinal Stone Saw

turer. The unit features a precision built track, a 3-point head mounting for cutting accuracy, simplified cutting depth and water feed controls.

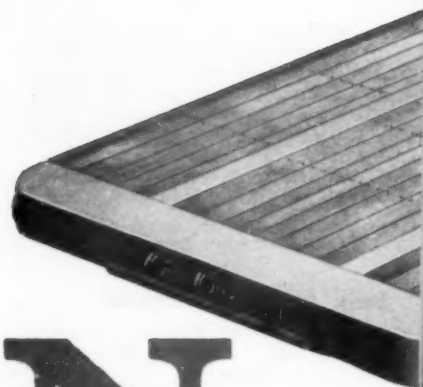
Cardinal Engineering Corp., c/o The Readinger Corporation, 7616 City Line Ave., Philadelphia 31, Pa.

For more details circle 157 on Enclosed Return Postal Card.


*announcing T/M's new*

# TITAN

*a rugged new Trailmobile flat designed  
around super-strong T-1 steel*







Husky, "J" shaped main rails are feature of new design that offers exceptional strength while eliminating unnecessary weight.

The Titan is available in conventional lengths up to 40 feet—with any kind of suspension.

*lighter! stronger!  
lower in price!*

The use of brawny T-1 steel (105,000 lbs. tensile strength) in the main rails of this new Trailmobile achieves a new standard of performance for flat trailers. Weight has been cut by literally hundreds of pounds! In fact, this powerful all steel design all but matches the lightness of aluminum units.

Approximate weight is only 8500 pounds—so with a 72,000 pound gross vehicle weight the Titan gives you up to 50,000 pounds of payload capacity! And you get all this profit capacity in a trailer that costs less than any comparable steel or aluminum flat available today.

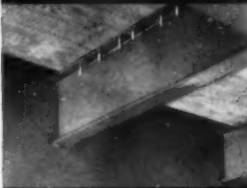
Further, the Titan will take tandem-tandem operation . . . can be equipped with any kind of suspension (including a standard tandem, 9 foot spread, Trail-Level air-tandem or sliding tandem) . . . and it can be easily converted to an open top with the addition of light aluminum racks.

Before you buy any flat, look into the singular advantages offered by the new Trailmobile Titan. You simply can't get better performance—at any price.

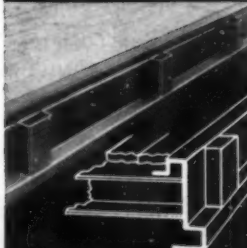
TR-777

**TRAILMOBILE INC.**

Cincinnati 9, Ohio • Berkeley 10, Calif.  
Springfield, Mo. • Longview, Texas



Underside view shows how I-beam cross members go through husky "J" shaped main rails. Note that cross members are welded in place at intersection points.



Stake pockets accommodate lightweight aluminum racks for easy conversion to open top. Inset sketch shows unique one piece design of rub rail that adds extra strength.

... for more details circle 379 on enclosed return postal card

**ROADS AND STREETS, March, 1959**

# To Cut Job Costs - Put MAGINNISS FULL SLAB VIBRATORS -



## ON YOUR FINISHING MACHINE



### Increase production 20%

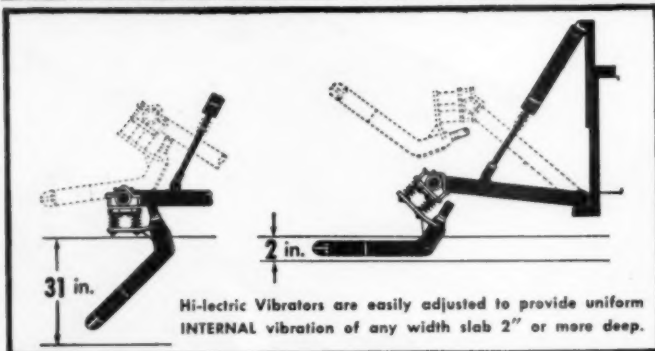
Hundreds of paving contractors are eliminating the second pass of the finisher—and often the need of a spreader—by using MAGINNISS Hi-lectric Vibrators on their finishing machines. Operating completely immersed in the concrete, Hi-lectric vibrators speed distribution, leave surface semi-finished, increase production up to 20%. You can bid lower—and IMPROVE quality of concrete—by using MAGINNISS Hi-lectric internal vibration.

### Easy mounting

Quickly mounted on any finisher or spreader. No auxiliary carriage required. All attachment parts are furnished complete.

### Minimum labor

The finishing machine operator controls all positioning of vibrator, on and off, and the vibration speed to suit consistency of concrete and other job conditions. Vibrators are raised and lowered by double-acting hydraulic cylinders powered by the hydraulic system of the finishing machine.



### Eliminate honeycomb throughout slab

Angle positioning of vibrators below surface of slab obtains most efficient results possible—assures a UNIFORM homogeneous mixture of aggregate and mortar from base to surface. MAGINNISS Hi-lectrics easily handle the stiffest concrete mixes.

### Packed with power—built to last

Hi-lectric Vibrators have only TWO moving parts. No brushes, commutators, gears, flexible shafts, nor complicated air or fluid drive mechanisms to require costly repair or replacement. Because the induction motor is located in the vibrator head, it is cooled by the surrounding concrete.

WRITE FOR COMPLETE INFORMATION—or call your nearest MAGINNISS Distributor. He's listed under "Contractors Equipment" in 85 principal cities.



**MAGINNISS Power Tool Company**

Dept. RS-39, 154 Distl Avenue, Mansfield, Ohio

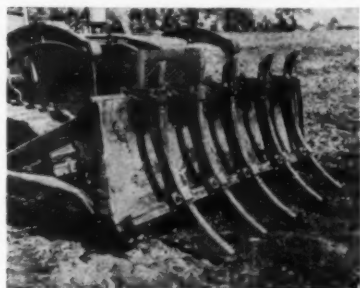


... for more details circle 355 on enclosed return postal card

## New Products

### Grubber Attachment

A new low cost W&H dozer grubber introduced by Williams & Hussey Machine Corporation fits bulldozers such as International TD6 and TD9, Caterpillar D2 and D4, Allis Chalmers H6, John Deere and other makes of similar sizes. The attachment, readily assembled or removed from dozer blades, has reversible teeth of high alloy steel which can be spaced at any interval desired. Standard W&H dozer-



W&H Dozer Grubber

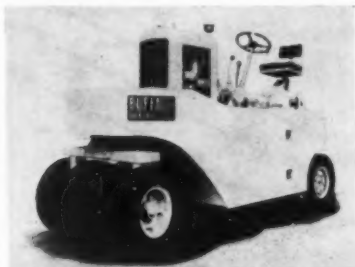
grubber attachments are 92 in. wide and have five teeth. More teeth may be added to the attachment or it may be used with but a single tooth depending upon the operation. Ripping out roots, toppling trees, unearthing rocks, removal of brush or lifting black top—all may vary the desired set-up as to number of teeth, spacing and penetration. Maximum penetration is 14 in.

Williams & Hussey Machine Corp., Milford, N. H.

For more details circle 158 on Enclosed Return Postal Card.

### Pneumatic Tire Roller

High mobility and low operating costs are claimed for Buffalo-Springfield's 3 to 10-ton, 9 wheel, self-propelled pneumatic tire roller. Designated the PSR-9, it has a sliding gear type transmission with torque converter which provides three speed ratios up to 15 mph forward and reverse.



3 to 10-Ton Roller

Drive wheels are mounted on oscillating frames, with two driving and one roller wheel on one side and two driving wheels on the other side. Positive drive is through propeller shafts between differential case and final drive cases on drive wheels. Forward and reverse clutches are hydraulically operated, multiple disc type, self-adjusting for life of discs, and oil cooled.

Buffalo-Springfield Roller Co., 1210 Kenton St., Springfield, Ohio

For more details circle 159 on Enclosed Return Postal Card.

### Anti-Corrosion Device

A new device for ending corrosion, rust, and pitting of radiators and engine blocks of cars, trucks, bulldozers and other construction equipment, is being introduced by Radi-8. Radi-8 is a patented element of natural metals that are fused and bonded together. Chemical principal on which Radi-8 operates is the same as that used to



Anti-Corrosion Device

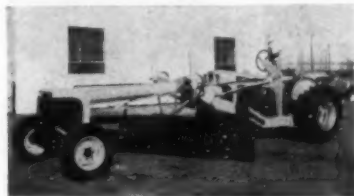
protect ocean liners and Navy ships: Radi-8 acts as an ion exchange, protecting metals by restoring their electron balance and taking onto itself all corrosive action. Electrolysis, the principal cause of rust and corrosion, is thus said to be effectively controlled.

Radi-8, 2501 Virginia St., Santa Monica, Calif.

For more details circle 160 on Enclosed Return Postal Card.

### Grader Attachment

The Lev-L-All, a maintaining tool introduced by White Star Enterprises, Inc., is designed for contractors, municipalities and government units concerned with grading, leveling, ditching, and maintenance. It is an attachment for all current models of Ford 600, 800, and 1800 series tractors. Features include a minimum turning radius,



Lev-L-All Attachment

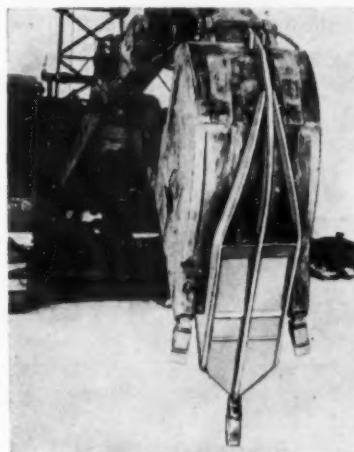
convenient hydraulic controls, a fully visible blade and a distribution of weight which provides traction for the use of full engine horsepower in all gears. Optional attachments include a power circle, power shift moldboard, scarifier, moldboard extensions, windrow eliminators.

White Star Enterprises, Inc., P.O.

For more details circle 161 on Enclosed Return Postal Card.

### Ripper Attachment

A hoe bucket attachment that is claimed to rip through 30 in. of solidly frozen ground in 30 minutes has been announced by Rapid Ripper Manufacturing Co. It protects bucket teeth and lip while breaking ground. Attached easily with one pin. Initial installation requires welding two pin supporting ears to back of bucket, a



Rapid Ripper

15-minute operation. After welding ears, ripper takes less than two minutes to attach, one minute to remove according to the manufacturer. It does not interfere with normal digging operations after tough ground has been pierced. The device is custom made to fit all makes of buckets.

Rapid Ripper Manufacturing Co., 4 1/2 Mile Road, Racine, Wis.

For more details circle 162 on Enclosed Return Postal Card.

### Radial Air Motors

A new line of Joy Pistonair 5-cyl., radial air motors for heavy-duty service is claimed to combine extremely high starting torque and sustained load-lugging ability with a simple throttle valve control that allows instant starts and stops, unlimited reversibility and infinitely variable speeds. Repeated overloads or stalls cannot harm these motors, it is said, and they are claimed to operate safely and dependably in explosive, damp, hot or corrosive atmospheres.

The motor horsepower ratings range from 11½ to 20 at 90 psi. Direct drive models turn at 400 to 800 rpm at rated hp with stall torques from 225 to 162 ft. lb. These models are available NEMA D flanged, making them interchangeable with electric motors having 254UD and 256UD and 286UD frame sizes; flanged with 15 in. diameter bolt circle; and foot mounted. Weights are from 230 to 289 lb.

Joy Manufacturing Co., Oliver Building, Pittsburgh 22, Pa.

For more details circle 163 on Enclosed Return Postal Card.

## Street Cleaner

A new gasoline powered, vacuum type trash pick-up, placed on the market by Activeaire Devices, Inc., picks up paper litter and automatically smashes and packs it into an attached burlap bag with outer dust catcher. A 2½ hp. 4-cycle, Lauson gasoline engine powers the heavy duty, heat treated aluminum smasher blade. The low



Activeair Street Cleaner

center of gravity and ball bearing wheels with extra large semi-pneumatic tires are said to assure easy handling and turning at all times. Large fuel tank permits hours of operation without refueling. A 30 in. wide intake scoop allows greater coverage for quicker trash removal.

Activeaire Devices, Inc., 1537 Bergen St., Brooklyn 13, N. Y.

For more details circle 164 on Enclosed Return Postal Card.

## Vibratory Compactor

A vibratory compactor attachment, designed exclusively for all 4-wheel drive "Payloader" tractor shovels, has been announced by The Frank G. Hough Co. The self-contained and self-powered attachment uses the Jackson electric system and can be interchanged with the bucket in a matter of minutes, it is claimed.

A heavy duty, air cooled motor and generator unit drives electric motor vibratory units on four compactor pads. Each of the pads delivers up to



Compactor Attachment

4,200 g-ton blows per minute. The compaction results meet most Proctor density specifications for granular materials.

The Frank G. Hough Co., 984 7th Ave., Libertyville, Ill.

For more details circle 165 on Enclosed Return Postal Card.

## Generator Accessory

A 4 kw, 110/220 "Power-All Pac" generator and portable 180-ampere "Power-Arc" welder, manufactured by Gibbs-Leherissey Co., are now being used with International Lo-Boy and Farmall Cub tractors. Consisting of special electric generator with Fast-Hitch driven by the tractor pulley



"Power-All Pac" on International

drive, the "Power-All Pac" can be used to power a variety of electric tool equipment. The unit in combination with the welder can make emergency repairs wherever the tractor travels.

Consumer Relations Dept., International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

For more details circle 166 on Enclosed Return Postal Card.

## C-Clamps

Featuring a swivel pad that is guaranteed never to come off, the new line of forged steel C-Clamps just announced by Proto Tool Company is



Proto C-Clamps

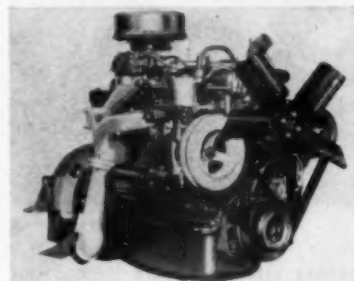
said to offer extra-deep throats, heavier, sturdier spindles. The new clamps have 2, 3, 4, 6, 8, 10, and 12 in. capacities, with minimum proof tests from 2,700 to 8,000 lb. The devices are said to be especially useful in fabricating and welding, and meet federal specifications.

Proto Tool Co., c/o Willard G. Gregory & Co., 416 West 8th Street, Los Angeles 14, Calif.

For more details circle 167 on Enclosed Return Postal Card.

## 6-Cyl. Engine

Reo's latest 6-cyl. engine, the O.H.185, is a 185 hp unit suited for tractor hauling in the 55,000-lb. GCW range and for tandem work. Among new features: coolant flow is increased 50 percent, and the water pump has a new ceramic disc which is said to virtually eliminate corrosion on the



Reo 6-cyl. Engine

impeller seal face. Full-flow filtration guards against wear and scratching.

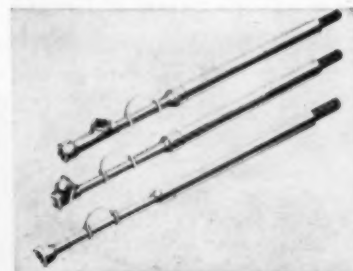
The Reo power take-off is located at the rear of the engine, ahead of the transmission, and is claimed to accomplish the same job as is done by the mixer drive off the front of the truck engine.

Reo Division, The White Motor Co., Lansing, Mich.

For more details circle 168 on Enclosed Return Postal Card.

## Off-the-Road Gauges

Three new tire pressure gauges, designed for checking air pressure in tires of off-the-road equipment, have been announced by the Dill Manufacturing Co. The three new models consist of a standard bore, dual foot



Dill Off-the-road Gauges



gauge; an oversize and standard bore push-on gauge; and an oversize and standard bore dual foot gauge. All models are available either in high or low pressure ranges. Included with each gauge is a certificate for one free service inspection, recalibration and cleaning. To guarantee maximum efficiency from tire gauges, this manufacturer recommends that a master gauge be used to check service gauges.

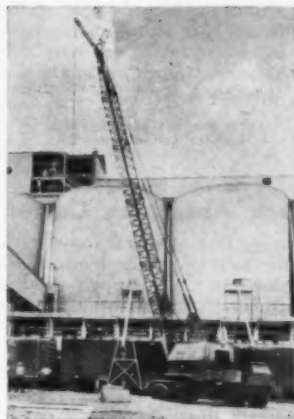
Dill Mfg. Co., 700 E. 82nd St., Cleveland 3, Ohio.

For more details circle 169 on Enclosed Return Postal Card.

## 45-ton Truck Crane

A new 45-ton transit crane announced by Bucyrus-Erie Co. is said to lift a maximum load of 45 tons with a 40-ft. boom at a radius of 15 ft. The Model 30-B can be used as a 1 to 1½-yd. hoe, 1 to 1¾-yd. shovel, 1 to 1½-yd. dragline and as a clamshell.

The new crane, which will reach 140 ft. with jib, has a boom fabricated of Tri-Ten steel featuring extra strong chord angles and larger cross sections. Point sheaves are mounted on pre-sealed, permanently lubricated anti-friction bearings. New features include an air operated boom hoist and engine master clutch to complement the air-control system; adjustable cone rollers;



45-ton Truck Crane

a 6x4 or 8x4 carrier with gas or diesel engine.

Bucyrus-Erie Co., South Milwaukee, Wis.

For more details circle 170 on Enclosed Return Postal Card.

## Concrete Vibrator

A new concrete vibrator, said to use a new engineering principle, is being introduced by the Construction Equipment Division of Pacific Mercury. A 1-



P M Vibrator

man operated machine, the vibrator utilizes low amplitude, high frequency vibration. There are no bearings in the vibrating device. The load on the center shaft of the unit is torsional; no eccentric load is applied to the motor, nor is a flexible shaft used. It is stated that concrete as stiff as 1-in. slump can be handled, and one man can operate the machine on the heaviest jobs.

Pacific Mercury, Construction Equipment Division, 14052 Burbank Blvd., Van Nuys, Calif.

For more details circle 171 on Enclosed Return Postal Card.

# Motor Hotel Guide

for the Highway Traveler

by BILL ROAMER



ALEXANDRIA, VA.—

I have never seen a more beautiful motel than the WAGON WHEEL of Alexandria. Located on seven beautiful, rolling acres of landscaped ground, along the historic Potomac River. The accommodations are luxurious and the food is superb—all in the Colonial style. Olympic swimming pool, children's playground—a memorable place to stop.



## WAGON WHEEL MOTEL & RESTAURANT

U. S. ½ Mi. South of Historical  
Alexandria, Virginia

**FREE!** Write to this motel for your free copy of the new edition of MOTOR HOTEL GUIDE. Lists over 700 fine motels.

**COAST-TO-COAST  
INSPECTED and APPROVED**



## SAND BLAST

the easy RUEMELIN way!

A practical Sand Blast Generator for all types of outdoor cleaning work. Removes rust scale, paint. Cleans bridges, removes laitence from cement. Cleans ready-mix trucks and highway equipment prior to re-painting. Equipped with remote control with deadman valve for stop and start at the nozzle! Wet type nozzles also available if desired. Portable units can be equipped with hi-speed mountings for highway trailing.

Write for descriptive bulletin.

## RUEMELIN MFG. CO.

3990 N. PALMER STREET MILWAUKEE 12, WIS., U. S. A.  
MANUFACTURERS AND ENGINEERS — SAND BLAST AND DUST  
COLLECTING EQUIPMENT — WELDING FUME COLLECTORS

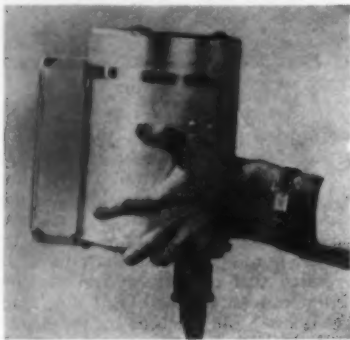
AR-9403-1/9A

... for more details circle 365 on enclosed return postal card

## Mercury Ballasts

A new line of General Electric mercury ballasts is now available for operation with mercury lamps ranging from 100 to 425 watts.

Called the "Bonus Line," the new units are designed, the manufacturer says, to provide higher operating efficiency and improved regulation in a smaller, lightweight design. The new ballasts provide rated lamp wattage in the horizontal position. The new core and coil design of the units protects



G. E. Regular Ballast

against lamp current or wattage increases even with changes of 10 percent or more in the primary voltage and provides plus 0 to minus 1.5 percent regulation. Especially designed for outdoor use, the ballasts are claimed not to be affected by extremely low temperatures. A seamless aluminum casing and sealed, die-cast, aluminum cover provide a weather-resistant enclosure for the ballasts.

General Electric Company, Schenectady 5, N. Y.

For more details circle 172 on Enclosed Return Postal Card.

## Vertical Shaft Engine

Wisconsin Motor Corporation has entered the vertical shaft engine field, with two models now being placed in production, according to the manufacturer. The model HACN has a power range from 2.5 hp to 6 hp at 1600 rpm to 3600 rpm. A larger model, HBKN has a range from 3.5 hp to 7 hp in a 1600-3600 rpm speed range. These engines are designed and engineered it is said, for compact, low silhouette appli-



Wisconsin Vertical Shaft Engine

cations. Features include: tapered roller main bearings; forged aluminum connecting rod; counter-balanced, heat-treated drop-forged crankshaft.

Wisconsin Motor Corp., 1910 S. 53rd St., Milwaukee 46, Wis.

For more details circle 173 on Enclosed Return Postal Card.

## Shock Absorbing Caster

A new line of shock absorbing casters for hauling fragile loads, building supplies, etc., over rough ground at construction sites has been announced by The Hamilton Caster & Mfg. Co. Of drop-forged steel construction, the new "Cush-N-Aire" casters are equipped with pneumatic tires of 8, 10, 12, 14 and 16 in. sizes. Casings are 4-ply with separate innertubes. Bolted hubs



Hamilton Caster

permit fast on-the-job demounting and remounting of tires, and wide base rims are said to assure better flotation and longer tread life. Load capacities range up to 1000 lb. per caster. Construction features include integrally forged kingpin, Timkin tapered thrust bearing, and slotted cotter pin nut for precise adjustment of swiveling action.

The Hamilton Caster & Mfg. Co., 1700 Dixie Highway, Hamilton, Ohio

For more details circle 174 on Enclosed Return Postal Card.

## Hand Cutting Torches

Airco Company International has introduced new injection-type hand cutting torches designed for use with propane and natural gas. Known as the Airco 2000 series, the torches have an "ease-on" cutting oxygen valve which allows smooth oxygen flow. This is particularly helpful the company says, in hole piercing, rivet washing and stay bolt cutting. The torch head is a machined silicon bronze forging. For rigidity and strength, the brass gas tubes are in a triangular arrangement.

Airco Company International, 150 E. 42nd St., New York 17, N. Y.

For more details circle 175 on Enclosed Return Postal Card.

## 1,075 CEM Compressor

Atlas Copco has announced introduction of an air compressor delivering 1,075 cu. ft. of air per minute at 100 psi. Company spokesmen said the new ER-6, which weighs 6,600 lb., may be installed either as a stationary unit or mounted on a skid-frame as a semi-portable machine for construction, mine development or other temporary use. They added that the new com-



Atlas Copco Compressor

pressor features such an extreme degree of balance that it can be operated on a skid frame without additional fastening to a foundation. Erection and alignment of the unit as a stationary machine is simplified by use of a special Atlas Copco base frame designed to be cast directly into a permanent concrete foundation.

Atlas Copco Eastern, Inc., Paramus, N. J.

For more details circle 176 on Enclosed Return Postal Card.

## Drill Sinks 9 in. Holes

A new Downhole drill weighing 460 lb. and using a Carset bit weighing 126 lb., added to the Ingersoll-Rand line, will put down 9-in. holes. The new drill, the DHD-500, available in four sizes and in bit diameters of 4 3/4 to 9 in., gains its efficiency from its hammer blows striking the bit directly. No power is lost through rods, couplings, etc., because the unit is right behind the bit. The air-powered drill's smaller outside diameter allows it to follow the bit into the ground.

Continuous cleaning of cuttings from the hole is achieved by a patented method of exhausting all operating air through the drill. Cleaning air can be directed through the machine even when the drill is shut off. This prevents falling material from binding the drill in the hole.

Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.

For more details circle 177 on Enclosed Return Postal Card.

## INSPECTION MANUAL

(Continued from page 129)

ers, to avoid this needless duplication of cost and effort.

The time may come when prequalification of welding fabricators and contractors, along with their facilities, equipment and supervisory personnel may obviate the need for qualification of the welders and welding operators themselves, individually. Prequalification of contractors is far from being a new idea. A step in this direction has already been taken by the Canadian Bureau of Welding.

Perhaps it is appropriate to add one further observation that has been quoted from Mr. Beaton's paper: Even competent visual inspection on the part of a bridge inspector cannot be substituted properly for competent supervision on the part of the contractor. Inspection is properly used to supplement and enforce suitable and competent supervision.

### AGC Publishes New "Blasting Log" Booklet

The first uniform record book ever published for blasting operations in construction is announced by The Associated General Contractors of America.

The "Blasting Log" provides contractors with a permanent record of each blasting operation. In the event of claims resulting from blasts, the contractor can use the log as a reference in connection with any seismographic records that may be available.

The unique feature of the "Log" is that for the first time it combines all material on blasting operations in one handy form. Each log contains 22 spreads that can be separated for use on separate jobs and a sample spread is included.

The booklet will help maintain a permanent record of the type of formation blasted, depth of holes used for the charges, type and quantity of explosives, number and type of delays used, weather conditions under which shots were made, geographic location and time.

The log was devised by the Liaison Committee of Safety Engineers, a part of the HGC Accident Prevention Committee which gave its approval to the log.

Copies can be obtained by writing to the National Headquarters of the AGC at 1957 E Street, N. W., Washington 6, D. C. They are 20 cents each, \$2.25 per dozen, \$15 per hundred copies.



**always a bigger bite**

Weight concentration in the lower center section eliminates top heaviness. Combined with 6 part block and tackle reeving, it gives OWEN Buckets that extra power to dig in at the beginning—and to continue to dig with equal force on both jaws during the entire closing cycle. At the end of the stroke, there is no power loss and lifting tendency is at a minimum.



**Other features that make OWEN the leading clam-shell "seller" are:**

**One-piece Head Construction**

**Riveted Bowl Construction**

**Single Main Shaft**

**Recessed Lip Design**

OWEN Engineers are at your service any time at no cost to you. Send us your needs, stating exactly what are your requirements. We should have the answer that will "fit the bill to a T".

**The OWEN BUCKET Co.**

BREAKWATER AVENUE, CLEVELAND 2, OHIO

BRANCHES: New York • Philadelphia • Chicago  
Berkeley, Calif. • Fort Lauderdale, Fla.

... for more details circle 361 on enclosed return postal card







● Bookkeeper Geraldine McDonough uses the machine as an error-proof copier for figures and tabulations.



● Office manager Frederick High photocopies a map section from a bound book in the office of Louis Berger and Associates, consulting engineers.

## Case Example . . . How Photocopier

# Cut Location and Design Costs

*Deed copying work done in days instead of months, and data and instruction processing speeded. A case example of how latest copying equipment serves in highway work.*

A portable photocopy machine, particularly adapted to copying deeds from land records, is proving a time and money saver for a New Jersey engineering company specializing in highway design.

The firm of Louis Berger and Associates, Orange (N.J.), and Harrisburg (Pa.), found that the new method of copying deeds has saved them approximately two months' salaries for six men, or more than \$5,000 on just one Interstate highway design assignment.

The machine, the Contoura-Portable photocopier, was used for the deed-copying during work on Route FAI-101 (U.S. 46) in northern New Jersey in 1957. The project was to design two sections totaling 15 miles through a number of smaller towns.

The road location traversed many commercially-zoned areas with small sized lots in the right-of-way, so deed-copying time would be considerable. The firm had to survey all properties along the proposed state route, make shifts to meet local conditions, and effect all possible economies. To be solved were problems of swamp, ledge, and design of substructures, including 34 bridges.

The right-of-way mapping schedule required looking up hundreds of deeds when the route was settled. Deed descriptions traditionally would have to be hand-copied, checked and rechecked to legally clarify the right-of-way. Then the mapping would normally be done, from the deeds, to furnish the state with data for right-of-way purchasing. There could be no skimping of

time on this end of the work, and accuracy was essential.

Spurred by the usual time clause in their state contract, the engineering firm purchased a Contoura-Portable photocopier, which could be used face-down on the bound volumes of the land records. The machine has a plastic air cushion which follows the contour of the bound pages, making possible clear black-on-white copies of all the printed material. A copy was made of each required page of the records, averaging 30 seconds per copy. Working in the Morristown Courthouse, the staff turned out from 150 to 200 clear, photo-exact copies of the deeds per day.

Since power use fluctuated in the courthouse, a Contoura voltage regulator was used, to assure a constant power flow. In order to get maximum use from every hour that the courthouse was open, only exposures were made, which cut the reproduction time to eight seconds per page. All deeds were copied with the same time setting.



As fast as the exposures were made, the copies were slipped into black-lined paper envelopes to take back to the Berger offices for later printing. The printing took another 22 seconds per copy. The two months time allotted the deed-copying was cut to five days.

The photocopied deeds were kept readily accessible for study and map making. Their use simplified and speeded the process of locating the properties on the maps. As each property was mapped, the engineers would note on the photocopy the appropriate map locations for cross-reference. Thus the complete file of photocopied deeds, keyed to the master map, constituted a permanent record of the properties in the right-of-way for the new road.

This photocopy file, further, has permanent value for engineering reference and legal documentation if needed, photocopies being legally acceptable in courts. The file, if wanted, was available to turn over to the state highway department on completion of the designing job.

● **Soil Boring Data Reports.** During the project, another engineering use of the copy machine developed for making multiple copies needed in connection with road and bridge design work. Soil borings were made, and reports were submitted to the engineers daily by the state inspector. The borings were taken to depths averaging 33 ft. and though most of the area was sand, gravel, boulders and clay, there was also a good proportion of marsh and swamp.

When testing the marshland, as many as ten boring reports would come in from the field to the engineers in a day. Then office manager Fred High, using the photocopier, would make a transparency of the reports in less than a minute. Using the transparency for a master on the Ozalid machine, enough copies to distribute to a dozen or more engineers and draftsmen could be furnished immediately and cheaply. Often as many as 30 copies would be needed if a change was made affecting the bridge design.

In daily use, the firm also uses the machine for copying signed invoices, purchase orders, correspondence. When the field office in another city telephones in for material, the photocopier enables them to send it out the same day, even when copies involve technical data, surveys or a section of blueprint.

## How Electronic Computers Speed Bid Checking

Electronic computers have short-cut bid-letting paperwork for the Michigan state highway department. Commissioner Mackie reports that the department's new system of electronic checking of contract bids can save as many as 15,000 man-hours a year. And contractors can receive an itemized listing of bids and their standing with competitors for the same work, shortly after each letting.

The system, inaugurated in 1958, involves the use of punch cards and IBM machines. Lester W. McMahon, design supervisor, and Maurice Rothstein, assistant engineer of design, were credited with developing the system. Now, a few thousand punch cards are giving the same information more quickly than the entire design staff used to do.

Rothstein explained that formerly each contractor's bid sheet had to be checked manually after a letting to determine low bidders for individual road projects. An average road or bridge contract may involve as many as 50 or 75 separate items.

Prior to the letting, each contractor enters his unit costs on sheets provided by the department. The figures for each item of construction provide the total of his bid for the over-all job. In an average letting there may be as many as 13,000 such contractor-item figures to be compiled to arrive at the low bids for the various highway projects.

It used to take as many as 150 men from the department's design staff many hours to check the contractors' arithmetic manually.

In the new system, Rothstein said, the bid items are punched in advance in "decks." A deck of punch cards contains a separate card for each of the items of work on a road or bridge contract. There is one such deck for each contractor bidding on the job, and each contractor has his code punched on each deck.

As a new contractor is added to the qualified list, he is assigned a code number for computing purposes. As the sealed proposals are opened the day of the letting, the information is flashed to the computing room in the basement of the Mason Building in Lansing where a sufficient number of decks are "punched out."

Following the letting, the pro-

posals are taken to the computing room, where IBM operators punch additional information onto the decks, indicating each contractor's bid for each item. The decks are then fed into the huge IBM computers which transfer the punches into figures. If a contractor's arithmetic has failed him, the machine will print an asterisk beside the particular item involved. The machine compares its own arithmetic with the contractor's and any errors made by the card puncher are immediately obvious.

At a recent letting, involving about \$7 million worth of road and bridge contracts, there was not a single error made by the operators, according to Rothstein.

## Joint Sealer Makers Cooperate in Training

The Joint Sealer Manufacturers Association, in cooperation with the Air Force, will conduct a training course for engineering and pavement construction specialists in techniques of maintaining airport pavements, according to C. Seibel, Jr., association president.

The association is comprised of manufacturers of specialized rubber-bearing joint sealing materials for pavements. It has worked to set industry quality standards for effective application in both highway and airfield construction and maintenance.

The training courses will be held at ten U.S. Air Force Bases throughout the country between February and May. Approximately 400 Air Force personnel will attend the sessions.

The courses will include round-table discussions on maintenance of rigid and bituminous pavements, and on airfield pavement marking.

Mr. Seibel, who is paving products manager, The Flintkote Company, further stated that the association plans to revise the current edition of its Joint Sealing Manual, a booklet which serves as the industry's principal guide in techniques of airfield and highway joint sealing maintenance.

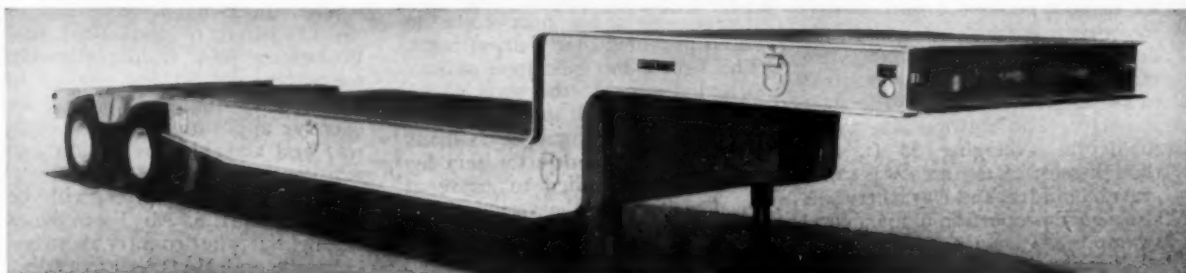
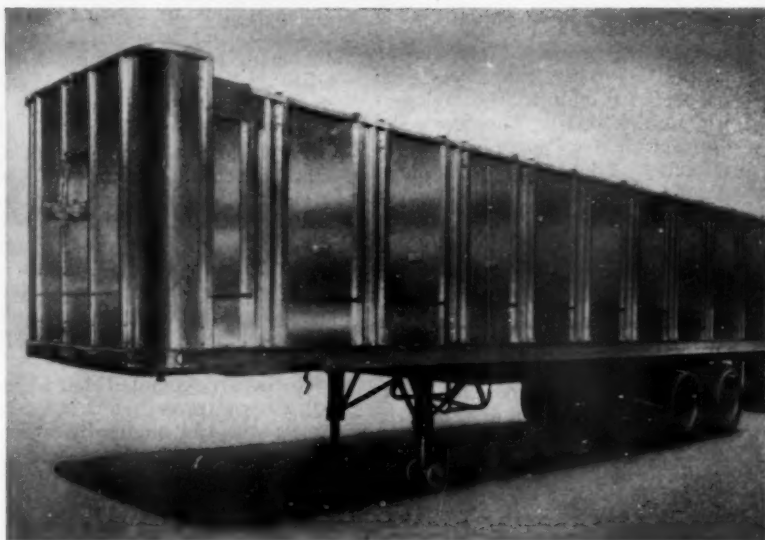
Members of JSMA include: The Flintkote Company; Presstite-Keystone Division of American Marietta Company; Allied Materials Corporation; Serviced Products Corporation; Naugatuck Division of the U.S. Rubber Company; and the Berry Asphalt Company.

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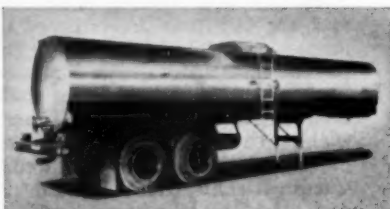
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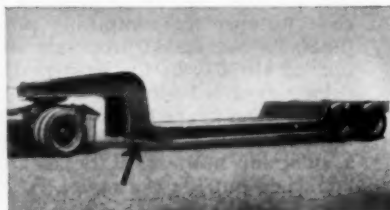
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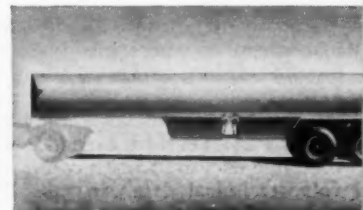
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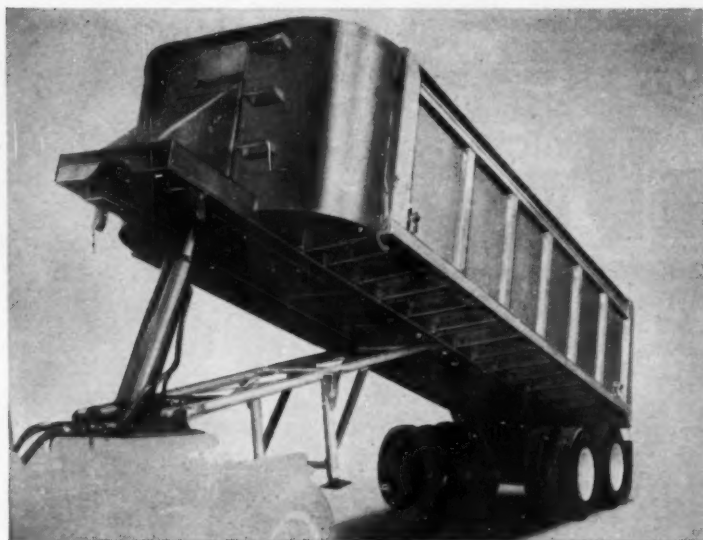


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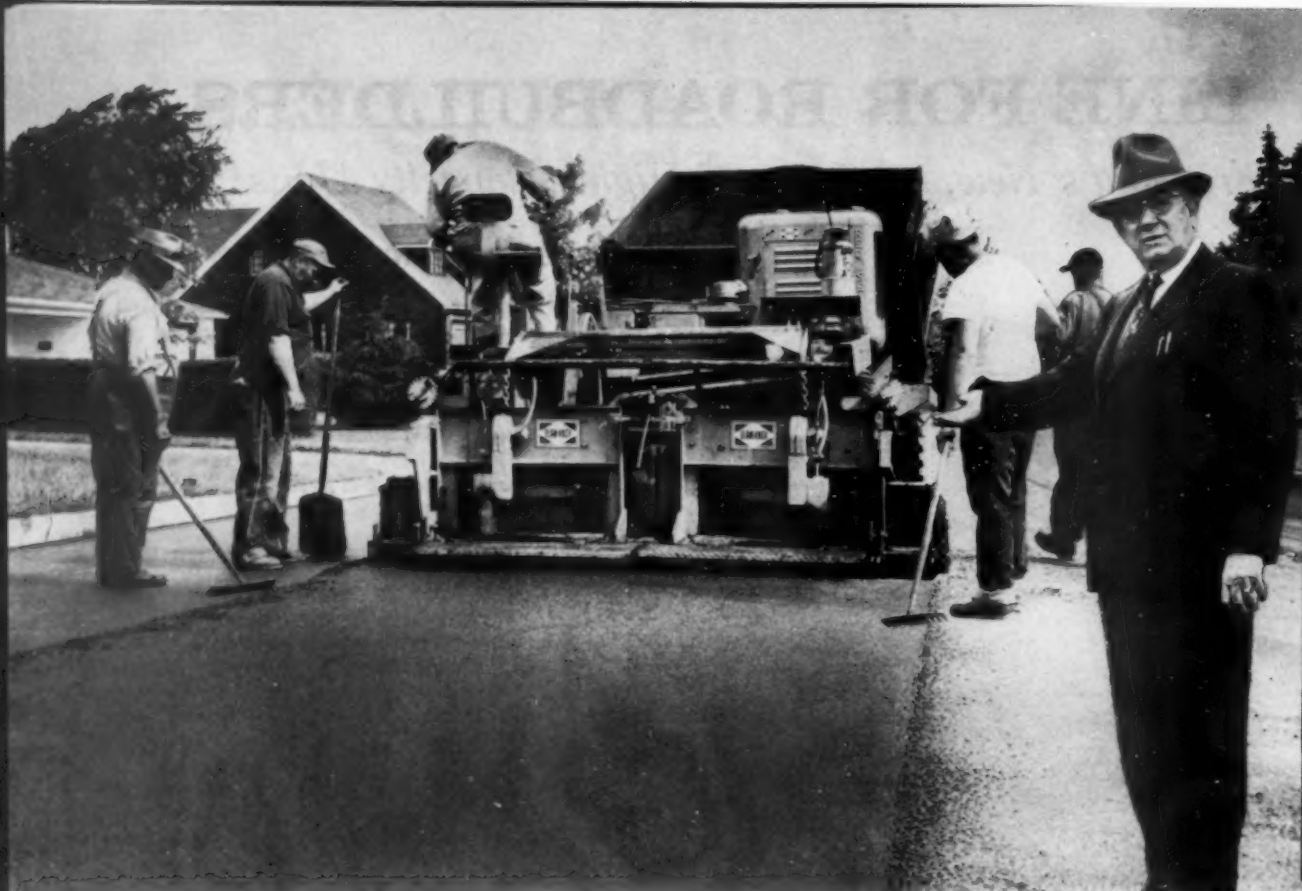
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**ROADS AND STREETS, March, 1959**





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# Bituminous ROADS AND STREETS

At NBCA's Miami Convention

## Bituminous Contractors Launch Ten-Point Quality Program

Far-reaching research effort, aimed at showing the way to better paving practices, announced in detail at National Bituminous Concrete Association's Meeting.

### *Roads and Streets Staff Report*

The highway industry is witnessing a phenomenon, in the form of a young association of contractors, barely three years old yet already getting set with a free-wheeling program to find some new technical answers to better their product. The National Bituminous Concrete Association, meeting in Miami Beach February 2-5 for their third annual convention, made news with the following:

1. Action was launched on a 10-point quality improvement program for the industry's product.

2. A technical coordinator was announced for this research. He is C. R. Foster, who has been chief of the flexible pavement branch, soils division, U. S. Waterways Experiment Station, Vicksburg, Mississippi. Foster will work under H. K. Griffith, NBCA's executive director.

3. Funds began to roll in to underwrite the program for a five-year

period, with sums approaching six figures quickly subscribed by several members while at the convention.

The quality program, which was first revealed in some detail exclusively in *Roads and Streets* (April, 1958, p. 182) stems from committee effort extending over the past two years.

The broad outlines of the present job were approved last summer. An entire session at the recent Miami convention was devoted to highlighting the program and getting the viewpoint of equipment manufacturers, asphalt producers, government agency leaders and contractor members, as to what technical support could be expected. It was emphasized that NBCA is uniquely fitted to carry out a quality study of this kind, in that it can do so with more objectivity than was heretofore possible with research done by refinery, equipment or other com-

mercial interests.

While industry firms are invited to contribute financially and will be represented through advisory committees, the association leaders are determined to tackle the selected areas of study with the fullest objectivity. With this in mind, the program is expected to be given over as a project to a university, as yet unnamed, and thus removed from the possibility of undue influence even by the association and its contractor members.

Heading NBCA's Quality Improvement Committee, which has been appointed to administer the program along with the NBCA headquarters staff and consultants, is Allen Snyder of Hefler-Snyder Company, Garwood, New Jersey. Committee members include E. T. Terry, New Haven Trap Rock Co., New Haven, Conn.; A. P. Bolton, Macasphalt Corp., Lakeland, Flor-



● NBCA's top brass at Miami: Sheldon G. Hayes, past-president and ex-officio board member (Cadillac Asphalt Co., Detroit, Mich.); John W. Kelly, president (Imperial Paving Co., Oklahoma City, Okla.); Allen Snyder, secretary-treasurer (Heffler-Snyder Co., Garwood, N.J.); Fritz C. Leffingwell, vice-president (Asphalt Paving Co., Coral Gables, Fla.); Paul R. Anderson, chairman of board (Standard Asphalt & Tar Co., Charleston, W. Va.)

ida; Richard R. Stander, Mansfield Asphalt Paving Co., Mansfield, Ohio; C. E. Buchman, Bituminous Products, Inc., Buffalo, N.Y.; Donald O. White, American Asphalt Paving Co., Chicago, Ill.; and W. T. Milam, Central Contracting Company, Ada, Oklahoma.

Member delegates at Miami were given a perspective on their new quality program by Warren B. Warden, of Miller-Warden Associates, Swarthmore, Pa., who has served as a consultant and worked closely with NBCA's executive director Kieth Griffith in the program's development.

"The program will give contractors a chance to work directly with the highway department engineers, and should be an effective sales aid for bituminous construction," he told the audience.

"Better quality paving will in the long run help the roadbuilding agencies cut their maintenance costs," he said, "thereby preserving more road funds for new construction. Thus the quality program will help you protect your market." He said that maintenance costs for all roads are high enough to give the agencies concern.

The quality program, Warden explained, will be geared in part to local or regional conditions and problems, and results will be sought which can be applied at the local level. He stressed particularly one of the program's ten objectives, better workmanship on the job. Poor contractor workmanship, he said, has long been the alibi of many equipment makers and other vested interests. He counseled contractors to "clean your own skirts first."

Without waiting on the program, the contractors are urged to develop better techniques for training contractor personnel, and for self-policing work out on the grade in co-

operation with the inspector. "Work Shop" meetings of foremen and operators, such as have taken hold in Minnesota and other states are expected to spread.

A major first effort in the new program is to be the sifting of all available literature on bituminous paving, and codifying it so that much valuable data now buried can be brought to bear on the study.

In tackling the job, the program's leaders expect to keep the lines of effort clearly defined, to seek separate and distinct answers to pinpointed problems—and when answers are found to make them available for practical application as speedily as possible.

"But we don't need all the answers before beginning to realize the benefits of the research," was Warden's final observation. Improved practice in the field will be felt progressively as the program moves along.

● **Objectives.** Bituminous concrete "has maintained its place as an economic and quality pavement under growing traffic use." And various public agencies and proprietary groups will continue to make technical contributions to the technology. With these circumstances in mind, the NBCA program's planners state their objectives in the following:

"It is recognized that:

"1. The misuse of materials, whether through faulty designs, improper construction practice, or poor workmanship, has on infrequent occasions resulted in substandard performance.

"2. The coordination of research activities and the proper dissemination of technical information on bituminous concrete has been inadequate.

"3. The technical literature concerning flexible pavements is spread

throughout diverse publications and needs to be properly classified, weeded out, and the facts made available to the Industry in a more usable form.

"4. Much remains to be learned, assimilated and put into practice to assure even higher quality bituminous pavements for the future. We must stay abreast of new products, new equipment and new techniques.

"5. There is need for the sponsorship of certain fundamental research not now known to be under way.

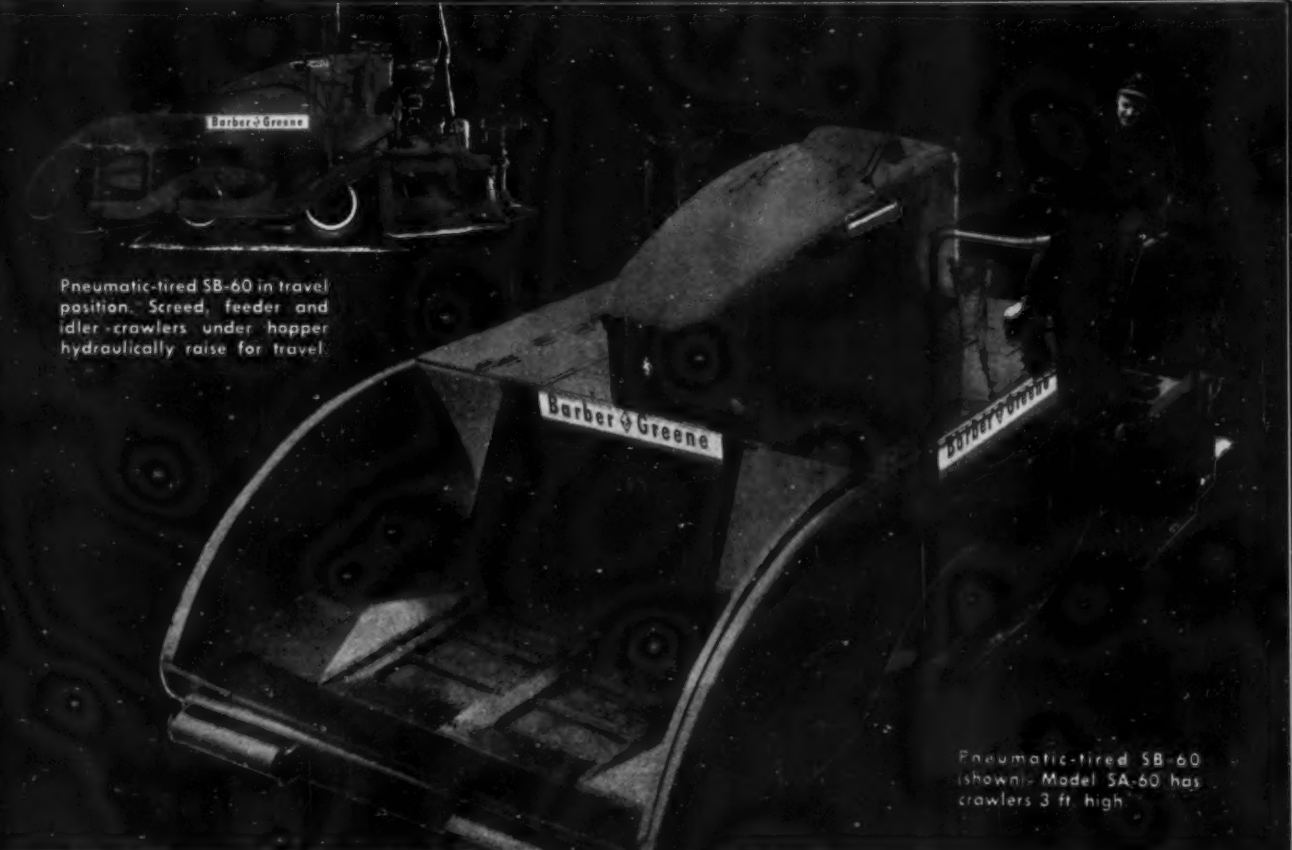
"6. There is need for improved communications and standardization of terminology, so that research findings and the best thinking and "know-how" of our State Highway Departments, Federal Agencies, Supplier's Association, Contractors and Engineers can be uniformly reduced to practice to the benefit of the industry across the country.

"It is the objective of NBCA to sponsor and coordinate work designed to satisfy the above needs."

The motivating force for this effort is the awareness that continued bettering of construction quality will help meet competition from alternate paving types.

● **Policies.** The studies will be directed toward the development, definition and uniform adoption of high quality standards; avoiding as a matter of policy, attempts to tell the refiner how to process his asphalt, the chemical manufacturer the additive he should supply, or the equipment manufacturer the materials and design he should adopt to accomplish a given result.

**Equipment Manufacturers:** The effort will be geared to defining and evaluating equipment problems affecting both production and quality, working closely with the equipment manufacturers without discrimina-



Pneumatic-tired SB-60 in travel position. Screed, feeder and idler-crawlers under hopper hydraulically raise for travel.

Pneumatic-tired SB-60 (shown). Model SA-60 has crawlers 3 ft. high.

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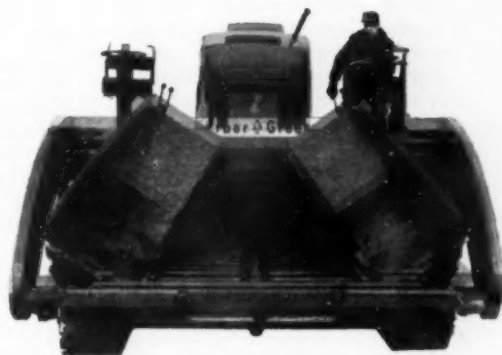
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ROADS AND STREETS, March, 1959

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tion but recognizing that the detailed design and actual production of the equipment is his responsibility and his job. The program will include, however, better means of disseminating information regarding the proper use, maintenance, adjustment and servicing of the equipment.

**Suppliers.** The program leaders have a vital concern in purchasing the best asphalt available and in helping to define those quality attributes which affect the service behavior of the finished pavement. Also a very real interest in properly assisting with and fostering the uniform adoption of realistic specifications in all states, to minimize the danger of small amounts of low grade material giving the whole industry a black eye.

With regard to aggregates and fillers, efforts should again be directed toward performance requirements and quality attributes. Studies will aim at defining quality in any aggregate, regardless of type, and means of evaluating and measuring those quality attributes necessary to meet the engineering requirements for a given pavement service.

● **General Plan.** The committee has discussed the plans with the Physical Research Branch, Bureau of Public Roads, whose personnel has contributed suggestions. It is reported that the Bureau approval will be given to utilization by the states of some of their 1½ percent research allocation funds for participation in acceptable jointly sponsored programs.

Full cooperation of the state highway departments is a key point in the suggested general plan. Close coordination will be sought, and some states are expected to contribute technical manpower and financial and administrative assistance.

Likewise full coordination with the work of AASHO, the Highway Research Board, the Asphalt Institute and other agencies is anticipated.

However, the bulk of the work in the NBCA program is expected to be done by colleges and universities, several of which have already indicated interest in taking on one or another specific subject. Some of the more practical types of effort may be handled in commercial or state testing laboratories, or in producers' plants.

● **Tentative Program.** The detailed program will be developed carefully

# How NBCA's Quality

*The following outline is taken from the pamphlet just published by the National Bituminous Concrete Association. The planners emphasize that the program is tentative and subject to polishing. Results of a questionnaire going to all industry segments will be studied before the final program is drafted.*

*Because of the program's importance to the highway industry, Roads and Streets presents in detail this preliminary outline of the scope.*

## **I. Producing, stockpiling, blending and feeding aggregate to plant**

### **A. Producing and Processing**

We currently question just how much of the actual crushing and handling in the quarry should be a part of this program. There are, however, some areas which do directly affect quality to varying degrees and these might well be better defined.

1. **Crushing Variables.** Elongated versus symmetrical particle shape. (Priority 8.)

2. **Effect of Weathering Time.** Fresh fracture versus aged surface characteristics on asphalt adhesion, etc. In rare instances chemical instability has been suspected of contributing to pavement distress, as for instance Maine's experience with aggregates containing iron sulphide. (Priority 9.)

3. **Proper Utilization of Local Materials.** There is often a compromise to be made between quality and cost in the utilization of local ag-

gregates and we suggest a study to properly define the limitations of various local materials, so that they will be used correctly. Much of this phase of the problem also relates to point number VIIA on the quality of aggregates. The phase to be covered herein under IA3 involves methods and techniques for the upgrading of materials during the production process. Priority 1.

4. **Washing, Particularly with Relation to the Fines.** We need a means of telling whether the nature of the fines is compatible with the production of high quality bituminous concrete. Under what conditions and with what materials is washing justified from a quality viewpoint and under what conditions is it a waste of good money and materials? (Priority 2.)

### **B. Stockpiling**

1. **Segregation.** How significant is segregation on various sizes and various types of cold feed (single aggregate versus split feed)? The effect of mix design on the importance of segregation in the stock pile

around the broad questions: *What do we know? What do we think we know? and, What do we need to know?*

A start has already been made in developing the program. Questionnaires will seek information technical areas where opinion is diverse; to bring our problems which are peculiar to a given area, type of de-

sign or material; to show how far standardization in the industry has progressed; and to highlight questionable specifications as a basis for localizing "trouble spots."

The voluminous but scattered literature of the field is to be reviewed by a task force assigned to this particular job. This effort is given a No. 1 priority.



# Probe is Shaping Up

(critical mix is thought to be worse but how much?). We need some facts on the practical effect of segregation in the stockpile on (1) the field end (bin balance, etc.) and (2) what does it actually mean with relation to the quality of the mix? (Priority 4.)

How best to stockpile? We are all acquainted with the desirability of avoiding coning by building stockpiles up in layers and taking them down in layers. Still there is no point in spending money on fancy methods or controls where the aggregate in a particular pile is all or close to one size. Here some arm-chair research and discussion of the problem might be helpful and result in the immediate saving of some dollars. (Priority 4.)

What cold feed splits should be stockpiled? How many fractions, what should the gradation span be and what should the control tolerances be? (Priority 3.)

Can methods be developed for reducing the moisture content of stockpiled materials by the use of chemical agents? We don't know that this idea has ever been tried or even previously thought of, but we think it is worth a look. Powerful surface-active agents are now available in both liquid and gaseous form which in very low concentrations could enhance the run off of liquid water from stockpiled aggregate. (Priority 3.)

## C. Blending and Feeding

What are the limitations and difficulties with present cold feed equipment? Are present methods satisfactory from a quality viewpoint? What are the variables? Are safety shutoffs or alarms needed for cold feed? (Priority 5.)

Preblending versus cold feed blending. Some States (Alabama) specify that certain aggregates be preblended in the stockpile even though the contractor may wish to use suitable cold feed blending equipment. This seems to us to be a step in the wrong direction and some educational discussion of the subject is indicated. The only case where we feel that preblending in

the stockpile is justified is where one of the materials is so gummy that it cannot be properly controlled through cold feed proportioning equipment. Again some arm chair research and discussion may do immediate good in some areas. (Priority 2.)

Are variable speed controls on total feed necessary and pertinent to quality production? (Priority 5.)

## II. Drying

As previously mentioned we have not had an opportunity to become acquainted with the work now under progress at Ohio State University on drying. Because of the importance of the subject and because work is already under progress, this whole subject of drying is tentatively assigned a priority of 1.

The key question of course is the allowable percent of moisture for various aggregates and various mix designs. Evaluation in the laboratory might be the immersion-compression test and the effect on density with a given degree of compaction. Field panels might also be observed for raveling, resistance to post compaction, stripping, etc. We will be interesting in observing the test methods used in Ohio for correlating equipment variables with the quality considerations. We would expect that the allowable moisture content would be a function of mix design, with the more critical mixes being more susceptible to the effect of moisture.

At the present time we do not recommend "long haired" research on diffusivity, etc.

From a practical viewpoint it is the hot bin samples and not samples directly from the dryer which should govern. What is the effect of conditioning of aggregates in the hot bin?

We also wonder about the effect

The booklet from which this review is taken with only minor abridgements, entitled "Quality Improvement Program," is available free on request. Address National Bituminous Concrete Association, The Associations Building, Suite 218, 1145 Nineteenth Street, N.W., Washington, 6, D. C.



Charles R. Foster, new technical coordinator of National Bituminous Concrete Association.

of surface temperature on the aggregate characteristics (both adhesion and degradation by fracture or loss of water of hydration). What is the maximum surface temperature and rate of heating permissible for various types of aggregates? What of the effect of the reducing atmosphere?

Most commercial dryers will deposit a thin film of oil and/or coke on the aggregate's surface, thereby changing its wetting characteristics. The Bureau of Public Roads is interested in this variable.

The Bureau is also interested in the development of a laboratory dryer which will duplicate field operation. The Bureau has indicated an interest in handling this development because of current interest in the subject.

## III. Methods of screening, storing and proportioning in the plant

### A. Screening

1. Establish realistic limits and methods of determining and defining overrun. There is currently a wide diversification of opinion on this subject and some specifications are confusing both as to interpretation and enforcement. This is another place where some arm chair research could be immediately helpful. (Priority 1).

2. The size and type of the smallest screen from both practical and quality viewpoints.

3. An extremely important point from the quality viewpoint is the gradation in the No. 1 Bin. We know from experience that it is the gradation as well as the amount of fines which has a considerable quality influence on the composite mix.

# NBCA'S QUALITY PROBE

Still there is no way to commercially control the gradation within the No. 1 Bin other than cold feed. The problem is to find some practical means of obtaining better control of the fines. On one job we had trouble with segregation in the No. 1 Bin in that all the minus 50 material and the dust accumulated on one side of the bin and the plus 50 portion of the fine aggregate on the other side of the bin. If we can do it accidentally why can't we do it on purpose? It may be that we could use and control kinetic energy separation off the end of the chute. Centrifugal force might be utilized by imposing a swirling motion to the material as it drops from the bottom screen to the bin. This would make a very fine and worthwhile research project. (Priority 1.)

## B. Storing

As previously cited bin design itself is the equipment manufacturers job but we should assist in defining problems and variables affecting both production and quality.

Hot bin segregation. (Priority 4.)

Temperature variation across the hot bins. This ties in with dryer operation, capacity and control. It is understood that at least one state (Missouri) either has or is considering making this temperature variation a matter of specification. We ask what is the significance of this control, how realistic is it, what does it mean with relation to the quality of the finished pavement? (Priority 4.)

Venting of the hot bins. Possibility of using hot stocked gases and/or forced air to assist drying and prevention of condensation in the bins. (Priority 4.)

What is the effect of the conditioning of hot aggregates in the bins? This point has already been cited in connection with II Drying. (Priority 1 if it can be tied in with the drying program, Priority 4, if not.)

Economics and practical limitations of hot bin insulation. Quality limitations—moisture and temperature? (Priority 4.)

Bin capacity considerations. This is a matter of specification in some States. Are there any quality considerations other than control? (Priority 4.)

Should telltales be required on hot bins as a matter of control? (Priority 4.)

Sampling methods. We need a device to give representative hot bin samples in the plant. In fact this whole question of proper sampling procedures is an important consideration. A review of former work on this question of sampling is indicated. This part of the program is merely a matter of education. Then a study of better methods of sampling both hot mix and hot and cold aggregates should be instigated in order to refine this important variable. (Priority 1.)

## C. Weighing

Should filler be weighed separately? It has been amply demonstrated that the filler content is one of the more important quality considerations. Still we add filler normally by weight, using the same scales for proportioning a relatively small quantity of a critical ingredient as we use for weighing large quantities of the less critical coarse aggregate. What is the precession by present methods for proportions or weighing all ingredients into the mix and what is the practical variation? What should this variation be for high quality work? (Priority 2.)

How about the order of addition of aggregates to the weigh box? We like to weigh in the coarse aggregate first—then the filler—then No. 1 Bin. In this way the filler is folded in with the hot aggregate and has more of an opportunity to absorb heat during the weighing and dropping operations. Is this the best procedure? (Priority 2.)

What is a realistic variation in control of A.C. content? Is the bulk of our variability in sampling and testing or is there a large actual variation from batch to batch. Road cores usually show low variability (on the order of 0.1%) whereas plant samples are usually higher (of the order of as much as 0.5%). With critical mixes, in particular, small variations in A.C. content can have a marked influence on the flexibility, durability and stability of the composite mix. Are the variations observed realistic and are they significant? Should A.C. be weighed or metered? (Priority 2.)

Specifications call for calibration

and sealing of scales but this does not check on the actual weight of aggregates that go into the mix under practical operating conditions. What is the difference and how significant is it with relation to the quality of the finished pavement? (Priority 2.)

Automatic versus manual control. The bin interlock question. (Priority 2.)

What happens to the quality of the mix when proportioning by weighing of an aggregate such as slag which varies widely in specific gravity? (Priority 2.)

Again the matter of sampling procedures is a factor in all of the above considerations. (Priority 1.)

## D. Continuous Plant Proportioning

Is there a need for better understanding and standardization of calibration procedures in the field? (Priority 5.)

What are the actual controls and variability comparisons between continuous and batch plant? Is this difference significant from the quality viewpoint? Priority 5.

Positive locking of feeds on continuous plants? (Priority 3.)

Again we have the question of what is realistic A.C. control for both continuous and batch plants. (Priority 2.)

## IV. Production of the bituminous mixture

### A. Method of Addition of Ingredients and Pre-Mixing Considerations

#### 1. Dry Ingredients

Is there a practical way of eliminating dry mix time by use of ribbon mixing of dry aggregate and filler between the weigh hopper and the pug mill or with an intermediate pre-mixer? There is an obvious economic advantage to this. (Priority 2.)

#### 2. Asphalt

Spray bar versus dump versus atomization—effect on quality of finished mix (hardening, absorption, adhesion, uniformity, stability, permeability, ease of compaction, flexibility and durability). A fair amount of work has already been done on this subject and it is hoped that our literature survey and presentation of the factual data will help clarify the issue. It is logical that the methods of addition of the asphalt should be a quality variable and we feel that this point should be further defined and evaluated. (Priority 2.)

3. *Desirability and practical means of coating the coarse aggregate first then adding fines and filler.*

The point here is to improve the bond between the asphalt and the coarse aggregate, to possibly reduce overall mixing time and to get away from "balling" effects. (Priority 7.)

**B. Mixing**

1. *Dry mix*

When using added mineral filler it is probably necessary to have some dry mix time in order to warm the filler, if there has been no pre-mixing. However, is fifteen seconds realistic or is this just an arbitrary time which has been adopted without a sound technical basis? Quite obviously large economic gains are possible if shorter dry mix times are practical. (Priority 2.)

If there is no added filler or if the dry ingredients are premixed, then we question having any dry mix time. Again large economic gains are possible by demonstration that arbitrary dry mix specifications are unrealistic and unnecessary, if no added mineral filler or if premixing methods are used. (Priority 2.)

Is there any appreciable aggregate degradation during dry mixing? Is this a significant quality consideration? (Priority 7, if studied alone, or Priority 2 if this question can be readily and easily studied in connection with the dry mix project.)

2. *Wet mix*

Is twin shaft pug mill the best method? Should we not take a fresh look at the fundamental concepts of mixing in light of modern materials and technology? Again the design is up to the manufacturer but it is felt that we can help with co-ordination of quality, efficiency and economic considerations. (Priority 3.)

Steam or inert atmosphere mixing. (Priority 3.)

Pressurized box mixing. (Priority 3.)

Investigation and evaluation of the impactor principle of mixing and its effect on the quality of the finished pavement. (Priority 3.)

Use of small amounts of solvent to aid mixing at lower temperatures and possibly in shorter times under steam atmosphere, with or without pressurized box. (Priority 3.)

Coating aids—use of chemical additives to assist coating. Are there practical advantages, are they economically sound, and most important, what is effect of quality of finished pavement? (Priority 3.)

The blade arrangement in the mixer is now, in some cases, a mat-

ter of specification. Are these specifications realistic and significant? Do they serve a useful purpose? On this and certain others we might bring home the fundamental policy concept that the State should be interested specification-wise in the finished product and leave the method of production to the ingenuity of private and free enterprise. (Priority 5.)

Some States also have specifications on blade clearance which vary from  $\frac{3}{4}$  in. to 2 in. Again, what can we do to assist in standardization and proper definition of optimum blade clearance? These points need clarification of significance under various conditions. Some of our specification writers need guidance, which is authoritative and unbiased, in the matter of realistic specifications rather than merely copying and using what has been on the books for years in that Agency. (Priority 5.)

Mixer capacity. There is now no defensible method of rationally determining and specifying mixer capacity. Specifications range from "center line of shaft" to "tips shall protrude." Again clarification and standardization of obsolete specifications is indicated. In connection with definition of mixer capacity we have recently suggested that the capacity be defined as the amount of material that the mixer can thoroughly coat in one minute. We are not suggesting adoption of this or similar definition but it is presented as one means of a more realistic approach to this problem. (Priority 5.)

**C. Mixing Time, Temperature**

There is a great deal of current interest in this important phase of the program. Barber-Greene has been actively engaged on work methods for determining mixing time for about two years. The Bureau of Public Roads is also working on this subject. The State of North Carolina has indicated an interest in conducting research on the effect of both mixing temperature and mixing time on the quality of the finished mat (particularly embrittlement and tendencies to induce premature cracking).

1. *Temperature*

Sometime ago Mr. H. G. Nevitt suggested that the proper mixing temperature should vary with the viscosity characteristics of the asphalt to be used in the mix. He suggested, as a starting point for later substantiation, that the optimum should be that temperature at

which the viscosity falls between 75 and 150 Saybolt Furol seconds. In recent discussion with Mr. Nevitt it was established that these are arbitrary limits which he selected merely to illustrate the principle involved. More recent work has indicated that the maximum mixing temperature might well be lowered and satisfactory mixes have been made in reasonable time at that temperature which corresponds to viscosity of 300 seconds. Certain other work has been published on this subject and the facts will be made available as part of our literature survey to help guide the program. It is an important variable from both the viewpoint of quality and economics. (Priority 1.)

2. Arbitrary mixing time specifications have plagued the Industry for a number of years. Fortunately many States are now taking a more realistic approach to these specifications. There still remains, however, the need for a rational method of establishing the minimum mixing time. Until such a method is available it is recommended that the minimum time be established by visual observation as that time required to coat the coarsest aggregate. Actually the minimum mixing time will vary from plant to plant, from mix to mix, and from day to day in the same plant depending on a number of factors such as the amount of moisture in the stockpile, the humidity and temperature, whether it is about to change blade tips, etc. Another variation of this mixing controversy is whether or not the time should be measured from the start of asphalt addition or from the end of asphalt addition. Barber-Greene has accumulated information on this important subject of wet mix time and have expressed willingness to cooperate fully with this program.

3. Effect of adhesion and subsequent water resistance. In discussing the effect of mixing time and temperature on the quality of the mix with the Bureau of Public Roads, it was pointed out that they have observed a difference in immersion-compression test results as a function of mixing temperature. Therefore this variable should be made part of the study. (Priority 1.)

4. Anti-hardening agents. Recent patent applications would indicate that some progress has finally been made in finding an effective antioxidant or anti-hardening agent for asphalts. If true, this is a notable step and should be investigated. (Priority 3.)



# NBCA'S QUALITY PROBE

## D. Discharge

It seems paradoxical to us that there has been so much conversation about segregation in the cold feed stock piles, while one of the most susceptible points for segregation has apparently gone virtually unnoticed. The normal manner of dropping the mix in a cone in a truck results in visual evidence of segregation. Is this segregation due to the manner of dumping significant from a quality viewpoint and if so what corrective measures should be taken. (Priority 3.)

## V. Transporting the mix to paver

### A. Maximum Haul

1. How long can a mix be held in a truck? What are the effects on compactability, changes in the asphalt (oxidation, hardening, etc.), water resistance, workability for laying, absorption into the aggregate? (Priority 2.)

2. Vibration effects. Some specifications cover the springing of trucks. Is there a vibration detrimental to the mix? How to define? What springing method is best? Is there a critical amplitude and frequency. (Priority 8.)

### B. Insulation

Insulation of truck bodies and covering of the load. Proper means of defining and enforcing. Specifications are now either hazy or are too definite. Better materials are needed for both insulation and covering. (Priority 4.)

### C. Anti-stick compounds

This involves the lubrication of truck bodies. Which lubricants are bad and why? What are faulty practices and how significant are they? Which are the most economical agents? Effect of silicone or detergents on quality of finished pavement (water resistance, etc.) (Priority 2.)

## VI. Laydown procedure, including rolling

### A. Spreading

#### 1. The finishing machine

Present machines are limited in their ability to lay to a true grade

because of the floating screed principle. The floating screed principle is not readily responsive to adjustment and tends to introduce irregularities in the grade due to extraneous factors such as temperature variation, laying speed, skill of operator, etc. With modern techniques and control on base preparation and fine grading, the necessity for a machine which will automatically compensate for wide variation in mat thickness is not so critical. Even where such deviations are encountered, a leveling course rather than attempting to compensate with a floating screed is preferable for high quality construction. It is therefore suggested that a new look be taken at spreading techniques with the objective of giving greater assurance of improved riding qualities. (Priority 1.)

Heating a screed or leveling plate is another point which may influence quality. Is overheating a significant factor and, if so, are automatic controls needed to minimize the danger? (Priority 1.) Tie in with N. C. temperature project.

Initial compaction imparted by the finishing machine is another open question on quality. Is pre-compaction desirable? How do vibratory and tamper compaction methods compare. Does vibratory compaction induce significant segregation? (Priority 3.)

#### 2. Spreading temperature

What are the variables? What is the minimum laying temperature for surface coarses to obtain the desired texture with various mixes? What is the permissible load to load variation in mix temperature? (Priority 1.)

#### 3. Speed of spreader

What is the realistic maximum and what is the influence on the quality attributes of the finished pavement? (Priority 6.)

### B. Compaction

Because of the importance of the subject and because of the early expression of interest from Michigan, a Priority of 1 is currently assigned to this overall project. While we have not had an opportunity as yet to discuss the program with the Michigan people we do have a number of questions which will be cited briefly.

What should construction void-

age be for good quality highway pavement? Effect of density on durability, flexibility and stability—permeability to air and water. Should pavement be compacted to ultimate density by use of rubber tired rollers as part of construction? How best to measure? Cutting and transporting of samples. Can highway pavement be overrolled? Optimum rolling pattern and temperature? Nijboer's work on rolling factor to tie in the many variables. How best to handle and control late fall work?

We would still like to see variable tire pressure self-propelled roller and work with same with various mixes. Load distribution and density gradient.

What is actual contact pressure? AB-59 on sand showed a high pressure area in center of tire due to centrifugal forces on tire carcass. What do static lab tests mean with relation to actual high speed pressures? WAASHO correlations showing importance of thickness of pavement adverse to some theories.

What is best parting agent for use on rollers? It has been reported that the Ottawa test section experienced some difficulty in which early detergents caused stripping. Non-aqueous agents. Teflon coating.

Maximum thickness of lift for proper compaction. Temperature differential top to bottom of lift—effect of H<sub>2</sub>O.

BPR wants information on means of defining pressure for both pneumatic and steel (contact pressure vs. tire pressure)—effective pressure vs. line pressure (#/lin. inch). Research on what it means.

Proof rolling of base over prime. How much and when? We now recommend 5 coverages, 16,000 lb. wheel load, 90 psi on the base but is this right? How fast should repetitions be? Effect of multiple wheels? While proof rolling on base, we are actually testing the entire structure to varying depths depending on load and distribution. We consider proof rolling of the base to be a highly important quality control procedure.

### C. Joints

1. Transverse largely a matter of workmanship. We know how so this becomes largely a matter of education and enforcement.

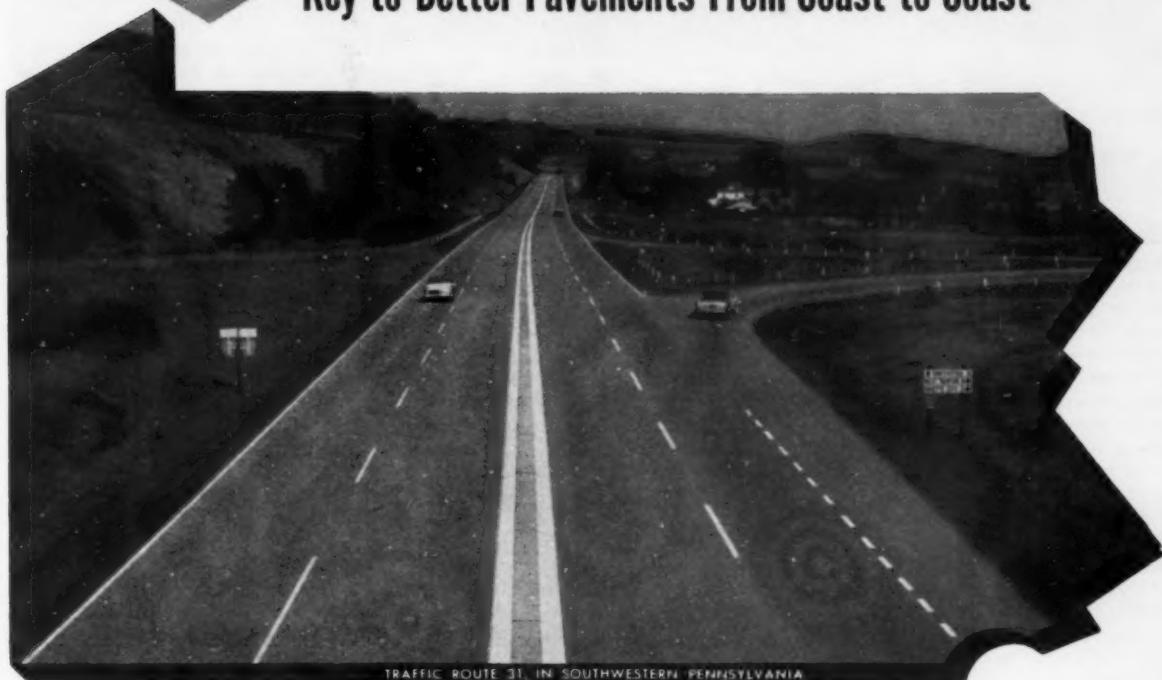
2. Longitudinal. How to best make a cold joint. Little or no problem with two pavers close together and proper rolling. Should longitudinal joints be trimmed and if so how? Rubber tired rolling as





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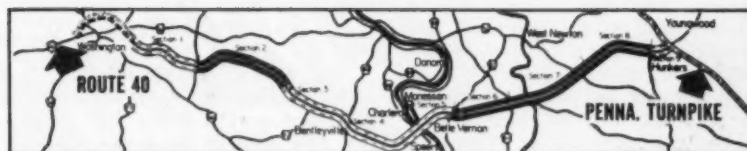
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# NBCA'S QUALITY PROBE

answer to raveling and cracking at point? (Priority 2.)

## VII. Quality of aggregate, cement and mix

Up to this point we have been largely concerned with the mechanics of handling, combining and placing materials. Point No. VII deals with the quality influences of materials themselves and of their combination. Of all the factors directly influencing the quality of the finished pavement the points covered under this heading are probably the most important when considered as a group. It is the area in which there is the most controversy and diversification of opinion. It is the one in which the greatest need exists for sound, well coordinated research. The principle subdivisions under this point include the three ingredients (aggregate, filler and the cement) and their combination into the composite mix.

Before proceeding to the subdivision considerations we would like to suggest that one major part of the program be a research study into fundamental concepts. An entirely new and fresh approach with a goal of providing a means for analyzing a flexible pavement in absolute units. From the structural viewpoint this involves the measurement of true stability or resistance to deformation *as it occurs in the pavement*, plus the definition of the elastic constants and resistance to fatigue. This is not an easy task and this particular assignment will be a long range project.

Our Industry has been hampered by the short comings of empirical test methods and our inability to obtain sound correlations. These empirical methods have, on the other hand, served as a stop gap basis for design and as such have contributed to our technology and well being. On the other hand, they have also led to misunderstanding and confusion and by so doing have contributed greatly by misapplication and oversimplification to costly errors and much lost time and motion. It is long past time to return to fundamentals and we hope that this program will provide both the inspiration and the means for so doing.

### A. Aggregates

Work with the National Association (crushed stone, gravel and slag) to enlist their moral, and we hope their financial support to define the quality attributes and the method and requirement for determining same. The three general factors we need to know are: (1) Structural strength (including resistance to traffic abrasion); (2) Surface characteristics (chemical, physical and mechanical); (3) Absorptive characteristics; (4) Weathering characteristics in some instances and the better recognition and definition of local area problems. (Priority 2.)

### B. Filler

Filler is a special phase of the mineral portion of the composite mix and one that we feel should receive special attention. It is known to have a great influence on quality and we suggest a separate program to study a number of these important factors which have heretofore been largely neglected. (Priority 1.)

The variables include particle size and distribution of the minus 200 fraction, type of material, chemical and physical nature, water resistance and emulsifying tendencies.

In other work it has been observed that the filler is wetted first by the asphalt during the mixing operation. Balls of a mastic consisting of asphalt and filler form first and this mastic is then distributed onto the coarser aggregate. We suggest that this filler-asphalt mastic be studied with relation to flexibility and durability of the finished pavement. We know from our work on industrial asphalts that as filler is added to asphalt the softening point is increased slowly and the penetration is decreased slowly. These relationships hold until some critical point is reached in the filler-bitumen ratio at which point the softening point increases sharply and the ductility drops to less than 5. This critical point in the curve varies widely depending on the nature and particle size distribution of the filler. In some cases it is as low as 16% by weight of filler and in others as high as 60%. Obviously if the filler-bitumen ratio is high enough to exceed this critical point

then the mastic is no longer flexible and the pavement is subject to premature cracking.

Louisiana has recognized the importance of gradation of the filler and has come out with a new specification dated March, 1958, in which tolerances are given for grain size all the way down to .001 mm. Cornell University in New York has also done some work on the effect of filler in bituminous concrete. Much additional work remains to be done and we particularly need a test method for evaluation of fillers and correlation with the elastic constants and the life of the pavement.

### C. Asphalt Cement

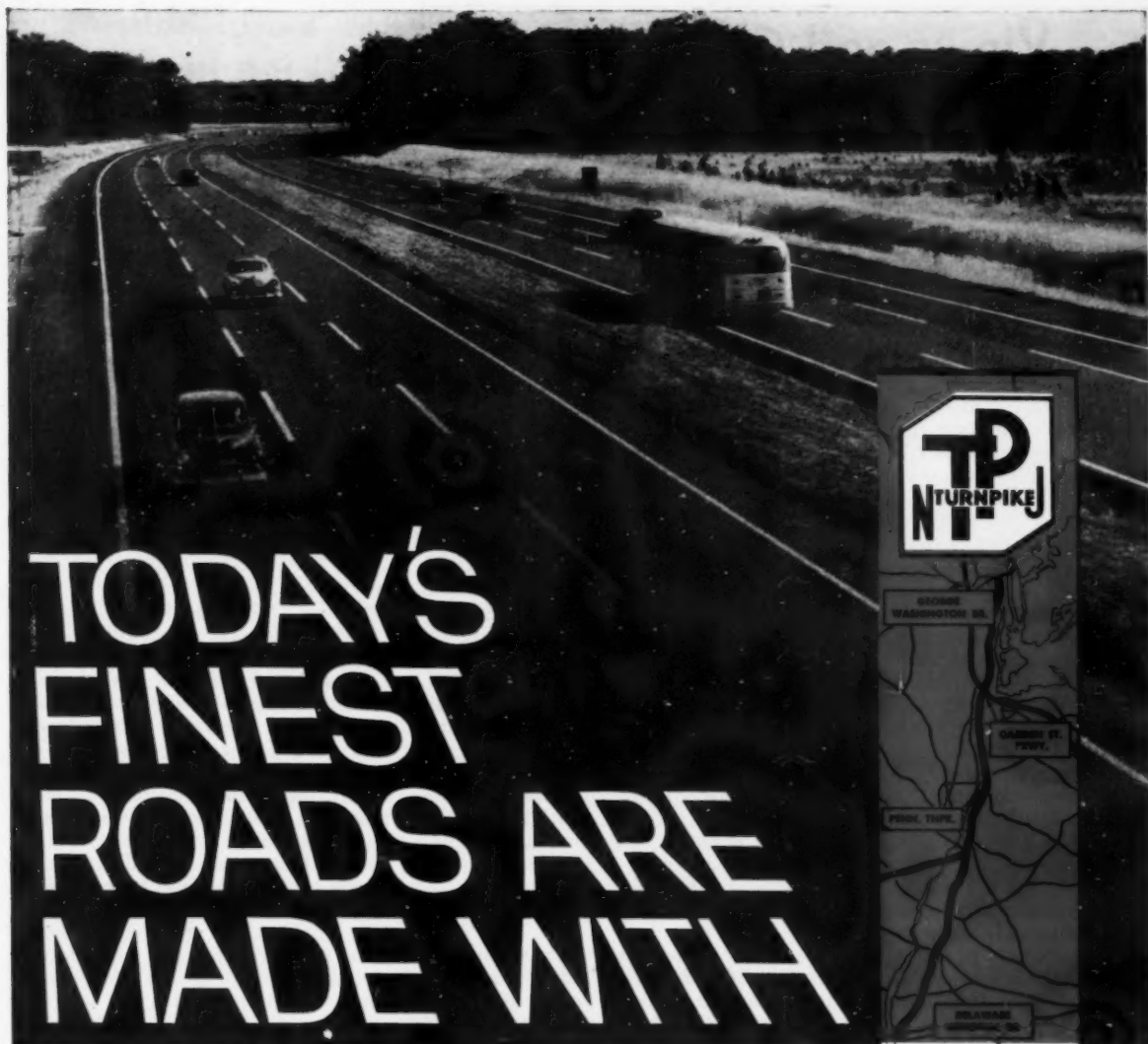
The Asphalt Quality Committee Report presented in Las Vegas recommended a definite approach to our study of asphalt cement. Also our consultants have proposed a more detailed version of essentially the same plan. These programs present a rational and positive approach to the quality improvement of paving asphalts and we concur that this is an important area for early action. (Priority 1.)

It might be well, however, to repeat our basic policy concept at this time; namely that we will avoid attempting to tell the refiner how he should process his asphalt or what the specific ingredients or chemical make-up should be. Our work will be concentrated on performance requirements and in this connection do not plan to accept with complacency any of the current methods of testing, but rather to foster new and more direct correlation between asphalt quality and service performance. Adoption of such well accepted methods as the Bureau of Public Roads thin film oven test, temperature susceptibility and the retention of low temperature ductility (50° F.) will, however, be pushed in the interim.

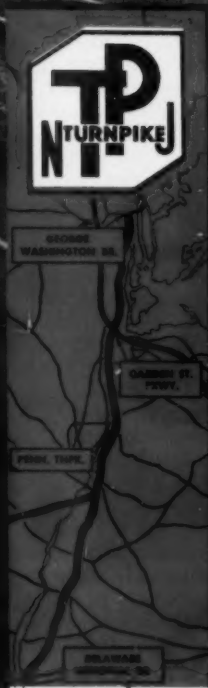
### D. Composite Mix

The recognition of the need for studies on fundamental concepts has been cited earlier. In the meantime, however, we have the immediate problem of obtaining the optimum balance between cost and quality on the basis of present knowledge. One policy point is that we feel it would be a mistake for NBCA to sponsor any one of the current empirical methods (Hveem, Marshall, unconfined compression, Hubbard-Field, etc.). Since these are empirical methods we feel that

(Continued on page 206)



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## Views and Comments

... by H. G. Nevitt

### COLD FEED

The cold feed end of a hot mix plant—more precisely its equipment and operation to assure reasonably close control of the rate at which each of the source aggregates is fed to the plant—has received considerable attention in recent years. In the belief that both the direct and indirect considerations involved are important, we offer some observations on the subject.

The immediate practical aspects of suitable cold feed equipment are summed up in the statement that you can't get out at the hot end what you don't put in at the cold. If the source aggregates are fed incorrectly or too sporadically controlled—as has often been the case in the past, perhaps still occurs too frequently today—the result will be costly waste of excess material from some of the hot bins and perhaps a marked reduction in the plant capacity. Our readers need no detailed discussion to recognize the penalties involved.

Certainly the plant manufacturer has more than done their duty to their customers in calling attention to this situation, and we doubt if poor cold feed installations will long endure. There are always smart contractors taking advantage of the benefits from better equipment, and competition will rapidly force any others who wish to stay in the picture to conform. If this progressive stimulation by the free enterprise profit motive could only be made effective in the field of flexible pavement design and control there would correspondingly be rapid improvement in asphalt paving technology.

The economics inherent in properly handling the cold feed would seem to be primarily a matter for the contractor, with the highway engineer only indirectly interested through his concern for cheaper and hence more pavement from the funds at hand. However we believe there are indirect aspects to improved cold feed control that are important to both parties. We will attempt to lay the foundation for this viewpoint.

Wider use of local aggregates, both for lower cost roads and conservation of existing aggregates, has long been advocated: in fact, it is one of the advantages offered by the bituminous type. To many this has usually meant merely the acceptance of poorer quality material or less satisfactory gradations, justified only because the results seem sufficient for the particular need. We believe that this is rarely the true situation; that local aggregates can quite often be used without depreciation of the ultimate road quality, provided that initiative in departing from conventional thinking, the use of meaningful tests and the analysis thereof, and sound judgment are all applied to the individual problem. However, with these must go contractor facilities and suitable controls to make possible in practice the results of imaginative yet competent engineering.

#### MARGINAL MATERIALS

We can only touch upon the many ways in which thoroughly satisfactory results can be obtained from apparently less satisfactory materials. The use of soft aggregates by proper design and aggregate mixtures; the use of gap gradings that result in strong workable mixes without demanding aggregates covering the full range of the usual gradation; supplying resistance in a low stability aggregate by bringing in a small proportion of highly frictional material; and many other devices are available to make local aggregates not merely usable but also a source of excellent pavements or bases.

In many cases these resourceful approaches to give a good final result call for more control at the cold end. Even with plants suited to multi-component mixes the facilities commonly available may not provide the control needed. To assure stability from two raw materials covering the same size range but with different frictional resistance, to control the fine grad-

ation beyond that possible from a fine aggregate bin and a filler feed, and other possible steps may call for appreciable control at the cold feed end. Of course the requirements must not exceed the limitations inherent in cold feed control nor call for equipment which does not likewise show a profit in its use with more conventional mixes, but these restrictions are rarely a matter of concern.

We hope that the preceding remarks, limited as they may be in scanning the possibilities, will clearly bring out the implications from imaginative material exploration and pavement design. Likewise that they will show the need for suitable feed stock handling and control, for more resourceful design will get nowhere unless the contractors possess equipment that meets the needs of such a program.

We trust that it is likewise clear that both engineers and contractors in the bituminous field have a considerable stake in forwarding this type of thinking. Just as the aviation industry through aggressive thinking in both design and fabrication techniques—many of which appeared complex and highly theoretical at the start, yet proved simple and practical in actual application—accelerated its growth beyond expectation to the benefit of all concerned, we believe the wide use of bituminous road structures can be speeded up tremendously by similar imaginative thinking on the part of everyone in it, not excepting the men right on the job. In this thinking cold mix equipment is merely another step on the ladder to results which will serve the public by better roads at less cost; and almost invariably the industries and individuals that serve are those that advance.

Next Month:  
Highlights of  
Denver AAPT  
Meeting



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**BLACK TOP EQUIPMENT:** A new "complete line" catalog covering the field of highway and road maintenance and construction equipment has been announced by Littleford Bros., Inc., 457 E. Pearl St., Cincinnati 2, Ohio. The new catalog JJ-1 describes and illustrates one of the most complete lines of black top equipment manufactured. Items included are: asphalt plants, bituminous distributors, brooms, asphalt pavers, kettles, supply tanks, rollers and accessory paving tools.

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**FLASHER SAFETY LIGHTS:** A new bulletin (LL-6807) announced by R. D. Fageol Co., Kent, O., describes the complete line of Fageol safety lights and barricades. Contents include complete specifications of HD-1-7 unidirectional lights. Model HP-2 wood and steel barricades are also described in detail.

For more details circle 180 on Enclosed Return Postal Card.

**PHOTOELECTRIC STREET LIGHTING CONTROL:** A 4-page bulletin (GEC-1524) available from General Electric Co., Schenectady 5, N. Y. describes control elements, hoods, and relays included in GE's new line of photoelectric equipment for outdoor lighting circuits. Application data, product descriptions, features, ordering information, and operating data are included for each of the units in the line.

For more details circle 181 on Enclosed Return Postal Card.

**SLACKLINE CABLEWAYS:** A new brochure (TC-1) released by Saverman Bros., Inc., Dept. R-18, 620 S. 28th Ave., Bellwood, Ill., describes eight torque-converter equipped slackline cableway installations. Haul distances of up to 1,000 ft. and digging depths of 90 ft. are covered in the individual plant stories. The brochure also gives typical operating costs for the slackline cableway and contains a layout

drawing of a representative installation.

For more details circle 182 on Enclosed Return Postal Card.

A 3 x 6 IN. INFORMATION FOLDER providing specifications and operation details of the new Thor No. 15 DL dustless concrete and rock drilling hammer and companion dust extractor is available from Thor Power Tool Company, 175 N. State St., Aurora, Ill.

For more details circle 183 on Enclosed Return Postal Card.

REMINGTON RAND UNIVAC DIVISION has issued a folder (UI 638) describing a new, low-cost system of punched-card data processing especially designed for small business. The new system makes it possible, it is said, for small companies, or branches and plants of larger ones, to machine process such accounting work as: production control, payroll, inventory control, accounts receivable and sales analysis.

For more details circle 184 on Enclosed Return Postal Card.



### Look at the uniform triple-lap coverage and straight edges you get with a "Black-Topper"

You can see the results of Etnyre's exclusive triple-lap coverage (spray from each nozzle overlapping two other sprays) in the unretouched photograph above. Road builders have learned that single-lap coverage is utterly unsatisfactory... double-lap coverage somewhat better... but triple-lap coverage is the complete answer to hitting rough aggregate from all possible angles for complete coverage.

Moreover, by turning the end nozzle as indicated, you get a sharp line edge which adds the finishing touch to the job. With this accurate alignment, you can spray right up to the edge of curbs. Such dependable operation and uniform, accurate distribution are typical results you can expect from an Etnyre. Investigate today — find out how soon a "Black-Topper" can be delivered to you to handle your work faster, better, more economically!

E. D. Etnyre & Co., Oregon, Illinois

SEE YOUR ETNYRE DEALER

**ETNYRE**  
**"Black-Topper"**  
 BITUMINOUS DISTRIBUTORS



... for more details circle 320 on enclosed return postal card

*Make  
your own hot  
mix!*



## White L-20 ASPHALT PLANT

**SAVE  
\$200  
A TON**

Make your own hot mix asphalt with this new WHITE plant and save about \$2.00 a ton. At its capacity of 240 tons a day, that's savings of \$480.00 a day. Thirty-one of those days pay for the L-20!

Produces any type mix you can get from a \$100,000 plant: AC, RC, MC, SC and emulsified for top course, base course, one course, or patch. Two men operate. Capacity is rated at a hot 315 degrees.

Available either portable or stationary, the L-20 will supply black-top for suburban streets, driveways, parking lots, school yards, or state highway maintenance. See nearest White distributor or mail coupon.



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VIBRATORS

*Manufacturers of  
quality construction equipment  
since 1925.*

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Please send literature on L-20 Asphalt Plant.

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☐ VIBRATORS

☐ TAR KETTLES

☐ Dealers: Check here  
for franchise avail-  
ability in your area.

For more details circle 388 on enclosed return postal card

**60-TON TRUCK CRANE:** Manitowoc Engineering Corp., Manitowoc, Wis., has published an 8-page catalog describing its new 60-ton capacity Model 2900 truck crane which is easily connected to clamshell or dragline. Full specifications are given and outstanding features described including 2-axle drive and heavy duty Westinghouse air brakes on all wheels.

For more details circle 185 on  
Enclosed Return Postal Card.

**UNIVERSAL MFG. CORP.,** Zelienople, Pa., has published a new instructional handbook on the use of steel paneled scaffold for shoring. Use of this method of shoring which is said to save on cost, forming and stripping time, includes sections describing details for special reinforced concrete conditions, as well as case histories for actual typical shoring layouts.

For more details circle 186 on  
Enclosed Return Postal Card.

**PARSONS COMPANY, NEWTON, IOWA,** has issued a new 4-page bulletin on its Model 130 "Treachliner." A wheel-type machine, the 130 digs trenches 12 to 25 in. wide at depths to 5 3/4 ft. Digging speeds from one to 18 ft. per minute are possible, it is said. Also included in the bulletin are photographs and brief explanations of four other wheel-type units offered by Parsons, including the 150 and 170 and the larger 420 and 520 models for cross-country operations.

For more details circle 187 on  
Enclosed Return Postal Card.

**HOSE COUPLINGS AND ACCESSORIES:** A new 8-page bulletin (Le-Hi Condensed Catalog No. 34) announced by Hose Accessories Co., 2704 17th St., Philadelphia 32, Pa., contains information on the variety of Le-Hi hose couplings and fittings for every type of industrial rubber hose. Also incorporates description and illustrations on several new items recently added to the Le-Hi Line.

For more details circle 188 on  
Enclosed Return Postal Card.

**PORTABLE ROTARY COMPRESSOR:** A bulletin (6058-S7) available from Advertising & Marketing Promotion Department, Worthington Corporation, Harrison, N. J., contains complete specifications on a new unit added to the current portable rotary compressor class. The unit features an "over-under" design that puts the first stage compressor cylinder directly over the second stage. It has self-draining cylinders, a silent chain drive and is equipped with two filters.

For more details circle 189 on  
Enclosed Return Postal Card.

**WIRE ROPE INSPECTION PLAN:** The effective service life of wire rope can be substantially increased by a proper program of inspection, according to Red-Strand Service Bulletin No. 104, issued by Leschen Wire Rope Division, H. K. Porter Company, Inc., 2727 Hamilton St., St. Louis 12, Mo.

For more details circle 190 on Enclosed Return Postal Card.

**JOHNS-MANVILLE,** 22 E. 40th St., New York 16, N. Y., has prepared a new booklet on the ability of "Placewel," a new water-reducing admixture for concrete, to help achieve better concrete. In plastic concrete, the material is said to increase workability and placeability and reduce bleeding and segregation. In hardened concrete, it is claimed to improve strength and uniformity and reduce cracking, permeability, honeycombing and shrinkage.

For more details circle 191 on Enclosed Return Postal Card.

**STRADDLE CARRIER:** A new 4-page brochure, available from Industrial Truck Division, Clark Equipment Co., Battle Creek, Mich., gives full specifications and construction features of the 40,000 lb. capacity Clark-Ross Series 95 straddle carrier. Operating characteristics such as travel speed, gradeability and turning radius are depicted in charts and graphs.

For more details circle 192 on Enclosed Return Postal Card.

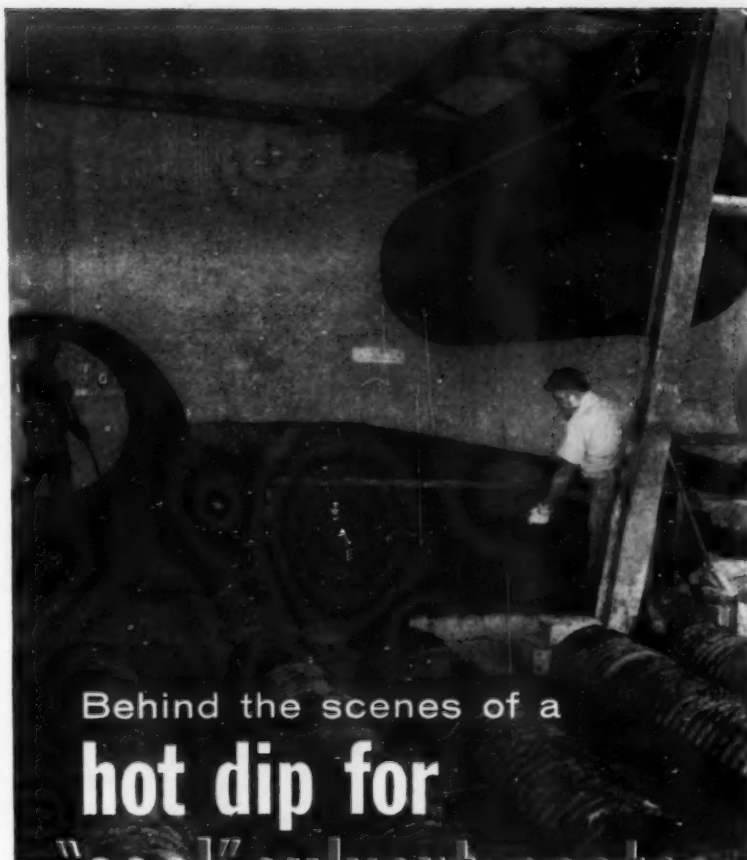
**"BELT CONVEYOR IDLERS,"** a 40-page book (2716), is available from Link-Belt Co., Dept. PR, Prudential Plaza, Chicago 1, Ill. It contains engineering selection data on five new series and 23 types of belt conveyor idlers and illustrates their versatility for a wide range of conveyor applications. The book lists the full line of idlers now being manufactured by the company for belt widths of 14 to 84 in.

For more details circle 193 on Enclosed Return Postal Card.

**"PROOF OF THE DIFFERENCE":** An 8-page booklet (DE 853) available from Advertising Division, Caterpillar Tractor Co., Peoria, Ill., outlines results of on-the-job comparative tests of Cat scraper and dozer cutting edges. High alloy router bits and bulldozer end bits are considered, together with "special application" edges developed by the company for severe, abusive conditions such as ram-pack loading.

For more details circle 194 on Enclosed Return Postal Card.

**THE CLEVELAND 190 PIPELINE BACK-FILLER,** with a new water cooled throw-out clutch, is the subject of a new folder by the Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17,



## Behind the scenes of a hot dip for cool culvert costs

Production got a push, costs took a dive when the Carolina Culvert and Metal Co.—division of Florida Steel—installed Cleaver-Brooks Peak Temp a year ago.

The operation: dipping sections of culvert in hot asphalt. Peak Temp's job: keep a 7000 gal. dip tank of asphalt and a 7800 gal. storage tank at 400°F. Peak Temp has been doing it on a 14-hr. day schedule with no shut-down since installation. Owner reports Peak Temp installation costs were only 1/3 of previous heater. And gas heat bills run only \$225.00 per month.

Peak Temp forced-circulation oil heater does away with high-pressure steam lines, valves, boilers. Raises and maintains bitumens and heavy viscous materials to application temperatures much faster than steam.

• **FORCED CIRCULATION** provides uniform heat distribution. No carbon build-up.

• **COMPLETELY AUTOMATIC**—fully equipped with advanced operating and safety controls. Quiet, smokeless. Completely fiber-glass insulated and metal-jacketed.

- **OPERATES AT ATMOSPHERIC PRESSURE**—minimum attention and maintenance.
- **NO REFRACTORY** in furnace to replace or maintain. No slack.
- **CIRCULATING OIL LASTS INDEFINITELY**—won't freeze in spring and fall operations.
- **HEATS OIL TO 450° F.** without special pumps and fittings.
- **RUGGED,** all-welded construction.

**Versatile**—easily adapted to heating a variety of viscous materials such as plastics, residuals. Highly effective, too, for quick drying of forms used with cast, prestressed concrete and structural members.

For full information write Cleaver-Brooks Company, Dept. C, 395 E. Keefe Ave., Milwaukee 12, Wis.



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ORIGINATOR AND LARGEST PRODUCER  
OF PACKAGED BOILERS

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Ohio. Copy describes Cleveland's new throw-out clutch which is cooled by continuous circulation of water from the engine's cooling system. Another improvement claimed for the 190 is the repositioning of the boom hinges above the crawler tracks.

For more details circle 195 on Enclosed Return Postal Card.

**4-CYLINDER L-HEAD ENGINES:** Revised 2-page bulletins (Nos. E-128, E-129 and E-130) covering three 4-cyl. L-head gasoline engines have been is-

sued by Hercules Motors Corporation, Canton, Ohio. They feature an illustration of the subject engine along with basic installation diagram, general data, power chart and specifications.

For more details circle 196 on Enclosed Return Postal Card.

**EUCLID DIVISION OF GENERAL MOTORS,** Cleveland 17, Ohio, has issued a 16-page catalog (Form 190) on the Model R-27 rear dump hauler for heavy construction, mines, quarries

and industrial operations. Illustrated with cutaway views of all major components and on-the-job pictures, the booklet also includes specifications on the complete machine.

For more details circle 197 on Enclosed Return Postal Card.

## Plastic Paving Material for Jet Airfields

Shell Oil Company has announced the development of a new super-tough plastic-and-asphalt paving. Created to meet severe conditions imposed by jet planes on airport runway and maintenance-area pavements, Epon<sup>(R)</sup> Resin Asphalt Concrete combines petroleum-derived epoxy resins and asphalt to make an "almost indestructible concrete."

The first commercial application was made recently at San Francisco International Airport. A 35-acre area surrounding United Air Lines' new jet maintenance base received a half-inch overlay of the new plastic pavement.

According to Shell engineers, the material will withstand blasts from jet engine exhausts without damage. It also resists solvent action from spilled jet fuel, gasoline, hydraulic fluids and cleaning solvents.

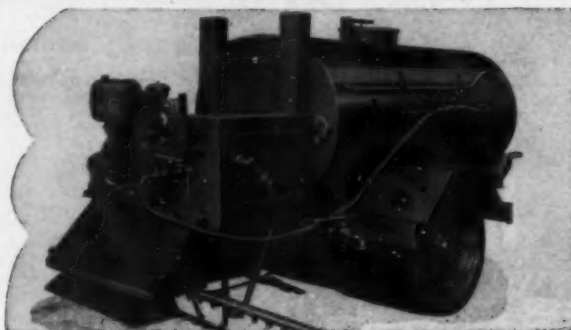
Epon Resin Asphalt Concrete's strength and resilience, it is stated, provide a pavement able to withstand the tremendous weight of new super bombers and passenger planes. Its resistance to wear provides a durable surface for heavy highway traffic, and will materially reduce the thickness of pavement needed for new highway construction, Shell said.

Before making the material available for United's base, Shell Development Company technical staff put it through laboratory and field tests. A strip under a truck loading rack has been subjected to continuous pounding from heavy tank trucks for 15 months. During that time, it has been almost continuously wet with lube oil and yet reportedly shows no sign of failure.

Another strip, in a service station, has resisted indentation from steel-wheeled jacks used to raise cars for tire changes.

According to Shell, the new plastic pavement is petroleum asphalt with Epon resin and a plasticizer added. It can be formulated in standard hot-mix asphalt plants and applied with conventional paving machines and rollers.

## STANDARD STEEL "S-J" Maintenance Distributor



### DOES THE WORK OF BIG EQUIPMENT ON SECONDARY JOBS FOR LOWER COST



**FULL CIRCULATING SPRAY BAR UP TO 12 FOOT LENGTH SEALS COATS AS PERFECTLY AS A FULL FLEDGED HEAVY DUTY PRESSURE DISTRIBUTOR**

Standard Steel S-J Maintenance Distributor is available in either trailer or truck mounted type . . . the trailer unit can be quickly converted to truck mounting by removing tongue and running gear. A fuel pump throw out clutch is standard equipment on all models. The clutch disconnects the pump from engine when burners are not being used. The pump and piping provide the following features: (1) Pumps from tank through spray bar (2) Pumps from tank to hand spray (3) Pumps from tank to outside source (4) Pumps from outside source to another outside source (5) Pumps from outside source into tank. This versatility is a very great help in speeding operation of the S-J. Entire pump and piping as well as spray bar can be easily cleaned through its special suck back feature. Write for complete details on Model S-J.

**OTHER PRODUCTS OF STANDARD STEEL**  
 ASPHALT DISTRIBUTORS . . . BURNERS . . . POWER AND TRAC-  
 TION DRIVEN CONSTRUCTION BROOMS . . . MAINTENANCE  
 DISTRIBUTORS . . . TAR KETTLES . . . AGGREGATE SPREADERS  
 STREET FLUSHERS . . . PIPE LINE EQUIPMENT . . . SUPPLY TANKS  
 SHELVEING HARDWARE . . . AND AGRICULTURAL EQUIPMENT



Standard Steel Works, Inc., NORTH KANSAS CITY, MO.

538

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## Contractor's Observation on Playing it Safe

(Editorial in "Hendrickson News" published for employees by Hendrickson Bros., Inc., General Contractors, Valley Stream, N. Y.)

When we talk of safety, what comes to mind, something real or something abstract? It would seem that the answer lies in whether or not we are safe-minded. If it represents just a word to one person then he is inclined to be either impractical or negligent. If safety is mentioned to a safe-minded person it immediately presents a picture in his mind of some specific protective device or practice.

To a carpenter the picture may be that of flattening protruding nails. To the housewife it may be that of removing scissors from a child's reach. To the machinist it may be that of placing a rigid guard around moving belts, to the welder that of wearing goggles and so on. Everyone instinctively knows the hazards in his daily activities but everyone does not do something about it.

Doing something about safety means being constantly aware of the hazards and practicing alertness in prevention of accident. When an accident occurs it is usually the result of unconcern or inattentiveness. One does not walk purposely into a sure-fire injury to himself, so why should he do it with inadvertence? Why does he not implant in his consciousness the continual will to remain safe from injury?

There is nothing sissy about playing it safe. The best craftsmen are those who are careful about all details particularly the detail of safe practice. One owes it to himself, his family and his employer to stay out of trouble. Accidents are trouble. Accidents are avoidable. The surest way to avoid them is by training oneself to work safely. The body is entitled to the same consideration as the object or product that is being turned out. The best way to keep from being hurt is to make safety a practice as well as a concept. Make it real, not abstract.

LAWRENCE BLACKWELL is the new chairman of the Arkansas highway commission. He is co-author of the amendment which recently set up the five member commission as a move to remove highway policies from political control.



Rosco Roller owned by Jay W. Craig Co., Minneapolis, on job at Aitkin, Minn.

## Increase Operator Efficiency and Produce More Work Per Hour with the ROSCO ROLLER SR-9-T2

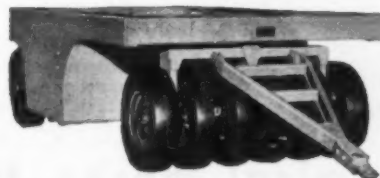
- ★ Torque Converter    ★ Reverse-Omatic Drive
- ★ Constant Speed    ★ Power Brakes and Steering

With this improved 9 wheel self-propelled roller your operator can surface nearly a 6 foot width at working speeds up to 15 MPH. The torque converter and Reverse-Omatic clutch and transmission eliminate scuffing of the surface. Power steering and a throttle setting device that returns to manual at a touch reduce operator fatigue and produce more work per hour.

A modern large-bore, short-stroke engine produces a surplus of power and travel speeds to 30 MPH. Water compartments are integral with the body and other components are set low for safe center of gravity and operator visibility. These features and Rosco's quality construction make the SR-9-T2 a solid investment and profit maker.



Rosco Roller SR-9-T2 with water attachment



Models CR9 and CR13  
9 or 13 wheel low-type rollers,  
90 and 120 cubic feet capacity.

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MINNEAPOLIS

**ROSCO MANUFACTURING CO.**  
3118 SNELLING AVE. • MINNEAPOLIS 6, MINNESOTA

... for more details circle 364 on enclosed return postal card

## Early Spring Patching Pays Off!



### PAVE Overcomes Water

PAVE is a surface active agent—a chemical that makes asphalt wetter-than-water. The PAVE-treated asphalt displaces water from wet road surfaces and wet aggregate, and then bonds securely to the surfaces.

Patching roads in the early spring frees work crews and equipment sooner for major road construction and adds weeks of work time to relieve overloaded work schedules.

Put down permanent patches during this normally wet, cold weather with PAVE treated mixes. Even temporary emergency patches can become permanent repairs when your mixes contain PAVE.

PAVE overcomes water in pot holes and in surface breaks. PAVE bonds the patch in the hole. With PAVE, wet, cold surfaces are patched as easily, and as well, as dry surfaces.

PAVE provides newly laid patches with resistance to kick-out . . . water stripping . . . and break-up. The PAVE bond is much stronger than the best bond that can be made between untreated asphalt patching materials and the road.

*For more information, write . . .*

**Carlisle Chemical Works, Inc.**  
**Reading, Ohio**

*Manufacturers of fine industrial chemicals*

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## First Order for New GM Diesel V's



Joseph Rosenblatt, right, president of Eimco Corporation, places the first production order for the 6V-71 Diesel engines announced recently by GM Diesel. Receiving the order for 100 engines are C. W. Truxell, left, Detroit Diesel's general manager, and Robert E. Hunter, general sales manager.

BLAW-KNOX COMPANY, Pittsburgh, has opened new west coast sales and warehouse facilities for construction equipment at 305 Adrian Road, Mill-

brae, Calif., 16 miles south of San Francisco. Inventories of parts and machines will be stocked at the Millbrae warehouse.

## Indiana Evidence of Highway Lighting Value

A two-year study of traffic accidents on a three-mile stretch of urban highway in Indiana, has been made in an effort to correlate the accident pattern at night time with lighting.

Conducted by the Indiana State Highway Department and State Police, the test covered a one-year period before in a year of service after installation of lighting on a segment of US 40 near metropolitan Indianapolis.

A 32 percent reduction in night-time accidents followed the installation, accompanied by a 38 percent drop in property loss resulting from accidents. The number of such accidents dropped from 100 during the first year to 68 during the second year, while daytime accidents remained about the same.

The lighting of the three-mile segment comprised 176 General Electric filament luminaries, mounted oppositely at 125 ft. intervals and at height of 30 ft., with 6 ft. brackets on steel poles.

## "RAMFLEX" RUBBER ROADS



don't **SPLIT** or **BREAK**  
even after our **SEVERE** weather",

says John Zablotny  
Supt. of Highways,  
Cheektowaga, N. Y.



"Saves time and labor  
and gives us better roads.

"In our 200 miles of roads to be maintained we have found Ramflex has definite advantages. It imparts rubberiness to asphalt so that our roads resist splitting in cold weather. Similarly, it makes asphalt less brittle which holds the aggregate firmly in place—thus reducing breaking. Asphalt containing Ramflex does not emulsify and retains its adhesion to the base—moreover, no shoving has been noticed even under heavy traffic conditions." All this adds up to better paving at low cost and practically no maintenance. And—Ramflex Rubber Roads are especially appealing to motoring taxpayers because "when rubber rolls on a rubber road... everybody "SAVES".

**U. S. RUBBER RECLAIMING COMPANY, INC.**  
P. O. BOX 365  
BUFFALO 5, N. Y.

**RAMFLEX** is a special rubber powder, developed by the U. S. Rubber Reclaiming Co., and can be purchased in any amount. Ramflex is added directly to the aggregate in pug mill before the asphalt. Can be put down by any competent asphalt contractor and requires no special equipment.

Write for Literature No. 26

... for more details circle 380 on enclosed return postal card



## QUALITY PROBE

(Continued from page 196)

each area should lean heavily on their particular experience with whatever method they have been using and not jump too rapidly or radically from one method to another without proper orientation of both their laboratory and field personnel.

We need a method of determining directly the actual air voidage in a compacted mix. The high pressure device reported by Illinois appears to be very promising in this respect and should be followed. (Priority 2.)

We need to know how to evaluate durability, both the water action and hardening effects. In this connection the sonic method discussed in recent literature by Professor Goetz at Purdue may be of interest. We also suggest consideration of alternate wetting and drying and the effect of dynamic action. (Priority 1.)

The Bureau people have called attention to the need for better answers to the following: Do any of the stability or other laboratory

tests correlate satisfactorily with the quality of the mixture as measured by actual performance? What test can be used to measure the tendency of a mixture to become brittle early in life, to determine whether or not a mix is workable, to determine flexibility? What are the important qualities desired for mixtures to be placed on a rigid base, semi-rigid base, and flexible base? Should lower penetration grades of asphalt be used for heavier duty pavements, for warmer climates? If so, just how low?

A special case involves over-lays and we suggest a separate program to consider the factors involved in both mix design and construction practice. The problems include design differences (flexibility of base), bond release, how thick should overlay be, wire mesh, maintenance procedures for deflection cracks, striping. (Priority 2.)

### VIII. Bases

While base construction is not directly concerned with the quality of bituminous concrete, still it is indirectly a very important consideration. We feel that this program should encompass the whole flexible

type pavement rather than being limited entirely to the bituminous concrete surfacing. Macadam said years ago: "No road is better than its base" and this is very true today. We must design the whole flexible pavement as a unit and we must know quality effects of the base variations on performance of the bituminous concrete surfacing.

Another reason for including bases in our program is added volume potential of black base and plant mix macadam construction.

The present Ottawa AASHO test should give us a great deal of information on this important subject and a tie in with Professor Burmeister of Columbia University on interpretation and significance of these results has been suggested. We plan also to refer to the work of Aldous of CAA and the work at the University of Washington on base construction. Western Labs., Inc. of Lincoln, Nebraska, have also developed a laboratory method which they feel would be suitable for comparative tests on bases.

This is a problem where there is considerable danger of oversimplification. The mathematical analysis of stress distribution in a flexible type pavement is highly involved. The work on two component systems is fairly well along but the analysis of three or more component systems (layers) is still under development mathematically and needs considerable additional work.

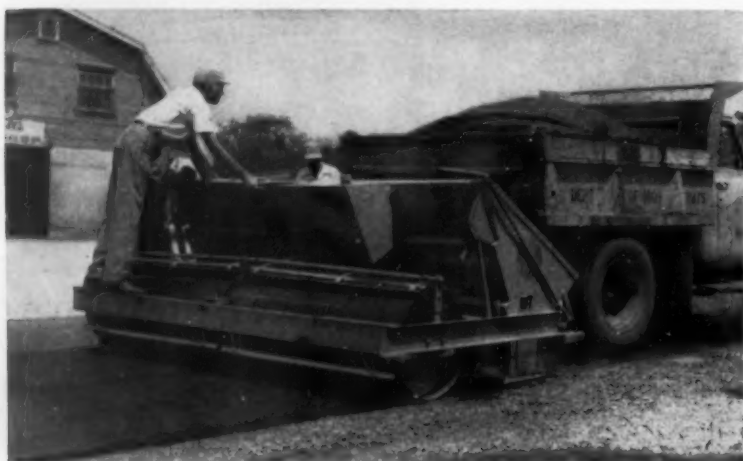
Field evaluation methods have been successfully used by the Navy conducting tests on base evaluation studies. Field testing is highly desirable because of the elastic effects of the sub-grade. Plate loading methods are used to obtain and evaluate the results.

Another phase of base considerations which has an indirect but very important relationship to the proper use of bituminous concrete is the reinforcement of existing bases. We plan to study this subject and hope to better define the pertinent quality attributes.

We are citing a priority of 5 to this whole consideration of bases because we feel that the Ottawa test results should be studied carefully before proceeding with further work under NBCA sponsorship.

### IX. General workmanship

Workmanship has been included as a separate point because of its importance on not only the life and service-ability of the pavement but also because of its direct effect



## OVERMAN

### STONE AND ASPHALT SPREADER A BIG-JOB PAVER AT A SMALL-JOB COST

You can do fast, high-quality paving with this small, compact, low cost machine. Lays any type commercial asphalt. Easily handled on small jobs, highly efficient on the largest job. A proven money-maker for contractors and highway departments everywhere.

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**BOX 896 MARION, INDIANA**

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on appearance and riding qualities. We feel that there is much to be gained by improved communications, educational programs for the training of operators, and in the study of merit systems and/or methods of self-policing. We also feel that it would be inconsistent for a contractor's organization to sponsor quality improvement without doing everything possible to better their own performance and workmanship in the field.

Transverse joints are a good illustration. Here we have the know-how but still we have occasional bumps that do as much to hurt the reputation and rider acceptance of bituminous concrete as many of the other quality points discussed. We should carefully study and put into immediate effect means of handling and overcoming workmanship deficiencies from stockpiling right on through to the finish rolling.

There are certain critical adjustments which must be maintained within narrow limits on all finishing machines for optimum results. The best means of defining these adjustments and getting the information to the field should be studied and methods developed for improved communications and policing.

The sub-titles tentatively suggested are: A. Techniques and procedures; B. Personnel training and administration; C. Merit systems and self-policing methods. (Priority 1.)

## **X. Related construction practices and materials**

This is a catch-all category for those factors which are not directly covered above but which are nevertheless important quality considerations in the construction of flexible type pavement.

### **A. Prime Coats**

Are primes worth the money? What does a prime really contribute? How do we know? What is the effect of base type? Are coal tar primes really better and, if so, why? Do primes contribute to compaction—under what conditions do primes help protect base or do they more often slow up production by preventing evaporation of water from underneath? (Priority 4).

### **B. Tack Coats**

Is a tack coat over the prime necessary or even desirable? (Corps specs.) Under what conditions should a tack be used between courses? How much tack? We con-

sider this to be quite an important question. A great deal of effort is taken to control the A.C. content within plus or minus 0.3% by weight, yet a tack coat applied at the rate of 0.1 gal. per sq. yd. of residual asphalt is equivalent to approximately 0.8% additional asphalt if it were evenly distributed in a 1 in. surface course of bituminous concrete. Actually, of course, the tack is not evenly distributed and even .05 gal. per sq. yd. of an RC-2 tack is enough asphalt to make a voidless layer of appreciable thickness between courses. We feel that tack coats are over used and that this is an important quality consideration.

How best to put a small quantity of tack where required? What type of tack is best from a quality viewpoint? (Priority 2).

### **C. Seal Coats**

One state (New Mexico) is now specifying an emulsion seal coat over all freshly laid bituminous concrete. We think that this practice is unnecessary and undesirable. However, under what conditions should a seal coat be used? When the void content of the compacted mat exceeds 5% the seal coat may be desirable. How much, what type and when? (Priority 4).

### **D. Additives**

A great deal of money is being spent in some States for the use of anti-strip additives for use in both surface treatment and in hot mix. Under what conditions should anti-strip additives be used in hot mix and how should they be evaluated and controlled?

Other additives (other than anti-strip) are also being explored as quality improvers for bituminous concrete. We feel that new materials should be properly and realistically evaluated with an open mind but that both their

economic and quality justification should be thoroughly checked. The chemical manufacturers and others should be encouraged to work with our Industry and we should assist with the evaluation and acceptance of new materials which can be demonstrated to offer realistic quality or economic improvement.

Again it should be emphasized that the above tentative program is presented not as a finished product but merely as an indication

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MAKE  
EMULSION  
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**Install the Charlotte  
Colloid Mill  
for Emulsified  
Asphalt**

for complete  
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**55 HERRICKS ROAD,  
GARDEN CITY PARK,  
L.I., N.Y.**

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## **SWENSON SPREADERS Speed Sealcoating!**

**Spreads Salt or Chloride  
for DUST CONTROL or  
SOIL STABILIZATION**

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SWENSON SPREADER  
& MFG. CO.  
Lindenwood, Illinois**



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**GRAVEL · SAND**  
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**OTHER ABRASIVE  
MATERIALS**

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THE  
**FINEST  
QUALITY**  
ALLOY STEEL WIRE

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## with the Manufacturers and Distributors

KARL A. ROESCH, general manager of Autocar, reports the retirement of Harry L. White, prominent trucking industry sales executive, and the appointment of Walter S. Mason to succeed him as sales manager of the Autocar Division of The White Motor Company.

ENSMINGER & Co., Inc., of Wilkes-Barre, Pa., has been named a distributor in 18 northern Pennsylvania counties for the "Moto-Bug" manufactured by Kwik-Mix Company, Port Washington, Wis. Ensminger, headed by R. F. Ensminger, president, and D. F. Fawcett, sales manager, will sell the units to both construction and industrial purchasers.

E. J. LASSERE has been promoted to office supervisor of the Southwestern division of Armco Drainage & Metal Products, Inc., as announced by W. W. Mains, vice president and division manager.

THE HEIL Co., Milwaukee, Wis., has purchased the trailer and truck equipment business of Truck Engineering Corporation, Cleveland manufacturer of trailer dump units. According to John Barclay, vice-president of Heil, Truck Engineering Corporation will continue to operate as the TEC Division of the Heil Co. with Julius L. Glick, formerly president of Truck Engineering, continuing to direct the Cleveland operation as general manager of the new Heil division.

THE FIRESTONE TIRE & RUBBER COMPANY has announced that it will build

## NBCA PROBE

(Continued from page 207)

of the scope and nature of some of the points which are to be considered in this overall program. It is admittedly very rough in this stage and undoubtedly contains some points which may ultimately be deleted and we know that there are points which should be added. We intend to solicit opinions and suggestions from all segments of our industry to assist in the refinement and drafting of the detailed program. This is a much needed and worthwhile undertaking which carries a tremendous potential for the well being of the whole industry. (Priority 4).

the world's first plant for the production of synthetic Diene and Coral rubbers. Both Firestone products, Diene is a partial replacement for natural rubber and Coral is a complete replacement.

THE WIRE ROPE CORPORATION OF AMERICA, Inc., has announced the opening of a new warehouse in Los Angeles, California. In charge of the new warehouse is Norman Shabaz.

ALFRED F. MANSBACH has been named to the position of advertising and sales promotion manager, Tractor Division, The Eimco Corporation, Salt Lake City.

MACWHYTE WIRE ROPE COMPANY has announced the appointment of William J. Anderson as a regional sales manager. Anderson will headquarter in Kenosha and supervise sales in the midwest and eastern sales territories.

MAX E. TYLER has been promoted to Atlanta branch sales supervisor for government and railroad trades, reflective products division, Minnesota Mining & Manufacturing Co. Tyler, who joined 3M in 1953, was previously market coordinator for federal government trades sales for the reflective products division.

E. C. STORK has been appointed manager of the Longview, Texas, plant of the Marlow Pumps Div., Bell & Gossett Co. The Longview plant will continue to operate as a sales and assembly unit of the Marlow Division.

KENNETH H. TRUESDELL has been appointed manager of Read Standard Special Products, William J. Strandwitz, Jr., executive officer of the Read Standard Division of Capitol Products

(Continued on page 222)

### Batch Truck Special

For Paving and Traveling Through  
Sand and for Transit Mix Trucks



Orders Are Being Taken Now on Tires, Tubes, Rims & Wheels on Wide Flotation Assemblies. That Replaces Duals 825-1000 x 20. On Single or Tandem Axles.

**HARMO TIRE & RUBBER CO.**

1050 18th St. Dep. R5 Detroit, Mich.

## SHOVELS-DAGLINES &amp; ATTACHMENTS:—

LINK-BELT LS-85.  $\frac{3}{4}$  yd. Cat. #318. #7A-1324. 1951. Overhauled. Repainted. \$6,750.00. Rental purchase. Yard.  
 INSLEY L. BACKHOE.  $\frac{3}{4}$  yd. Cat. #318. #8034. 1954. Overhauled. Repainted. \$8,500.00. Rental purchase. Yard.  
 INSLEY MOTOR TANDEM CRANE CARRIER. K-12. Outriggers. Fairlead. Outriggers. #5175. Completely rebuilt our shop. Repainted. \$5,500.00. Rental purchase. Yard.  
 LINK-BELT K-375.  $1\frac{1}{4}$  yd. Shovel. #3041. 1952. Only 4720 hours. Excellent. \$26,000.00. Rental purchase. Close K.C., Mo.  
 LORAIN L-820. 2 yd. Shovel. New 1953. Working. \$24,000.00. Close K.C., Mo.  
 LORAIN L-820. 2 yd. Dragline. #16440. D-13000 Cat. Diesel. High Contry. 4500 lb. Counterweight. Cat. walk. Good. \$17,500.00. Mo.  
 KOEHRING #1005  $2\frac{1}{2}$  yd. Shovel. #60860. Almost new Buda #1879 Diesel. Good. \$22,000.00. Terms. Close to K.C., Mo.  
 BUCYRUS-ERIE 22-B. Electric Mine Shovel. 1 yd. New 1953. Used two seasons. Excellent. \$13,500.00. Rental purchase.  
 MATION 111 M. Dragline. 5 yd. bucket. 80 ft. boom. #9580. 1951. Twin GMC Diesel. Electric swing. Reconditioned. Painted. Perfect \$62,000.00. Rental purchase. Indiana.

## SHOVEL ATTACHMENTS:—

P.G.H. #655-B complete with parts converting crane to shovel. NEW. \$5,000.00; #655-A. boom, stick, bucket \$1,850.00; Osgood #810-820  $1\frac{1}{4}$  yd. complete conversion \$3,500.00; UNIT #1020. NEW. \$1,250.00; N.W. #25 complete. \$1,850.00; Bucyrus-Erie #22-B. Some extras. NEW. \$1,350.00; BAY CITY #45. Complete \$1,750.00. Others. Yard.

## BACKHOE ATTACHMENTS:—

N.W. #25 complete. \$1,500; Marion #372. Complete. NEW. \$4,500.00. Can easily fit other makes. LIMA #34. \$1,800.00; LS-50 \$850.00; P.&H. Mighty Mite. \$950.00. Bay City #45. \$1,750.00. Boom for P.&H. 655. NEW. 30 ft. \$1,750.00. Fairlead. NEW. \$350.00. Others for smaller machines. Yard.  
 CLEVELAND DITCHER #140. #5764. UD-9. New 1955. only 20 miles of ditch. Practically new. \$6,500. PARSONS #230. New 1954. Good. \$8,000.00. Rental purchase. Yard.  
 BARBER-GREENE Bucket Loader. #522. Rubber tired. Swivel conveyor. LeRoi engine. Good. \$1,000.00. Yard.  
 KOEHRING Portable MUD JACK 50-2A. #22785. Overhauled. \$1,600.00. Rental purchase. Yard.  
 GMC 6" Portable Self Priming Pump. 6 cyl. Engine. Overhauled. \$600.00. Rental purchase. Also 4" and smaller. Yard.  
 HI-PRESSURE NETTING PUMP. 4" two stage w/Continental 6 cyl. engine. Up to 400' head. NEW. Original cost \$5,750.00. Sell or rent \$1,550.00. Yard.  
 CONVEYOR. Portable Atlas. 30"x50" belt. 4 cyl. LeRoi. Complete. Brand new, still in boxes. \$3,250.00. Yard.  
 ROGERS 20"x25" RB. Primary Jaw Crusher with GMC Diesel. Agon Feeder. Underconveyor. Tandem rubber. Good. \$13,500.00. Rental purchase. Yard.  
 SYFONS CONE 3 ft. Rebuilt at factory at a cost of \$6,700.00. Guaranteed like new. \$10,500.00. Ky.  
 CRAIN 24-ton Low Boys. brand new. New tires. \$3,000.00. Rental purchase. Yard.  
 KELLY-SPRINGFIELD 5-8 ton Tandem Roller. Rebuilt at a cost of \$1,400.00. Guaranteed. Rental \$300.00 mo/an purchase price \$3,200.00. Yard.  
 RANSOM II S. Mixer. on 2 wheel rubber tired Trailer. W/pump, side loader, etc. Practically new. \$1,000.00. Rental purchase. Yard.  
 INTERNATIONAL #300 Tractor w/Davis Backhoe and Front and Loader. Only 216 hours. Like new, guaranteed. Original cost over \$5,200.00. \$4,250.00. Rental purchase. Yard.  
 DAVEY 210 cu. ft. Portable Compressor, on rubber. Hercules Diesel. Late model. Rebuilt our shop. \$2,250.00. Rent \$200.00/mo. apply purchase price. Yard. Also 315 I.R. Diesel and smaller ones. Wagon drills.  
 WAYNE 20 cfm w/Wisconsin engine. V-drive. New. Cost \$650.00. \$375.00. Yard.  
 CAT D-8 w/8 S. Dozer. Ser. #17850. 1953. Rebuilt shop. Guaranteed. 60% rails. Sprockets, rollers 80%. \$12,500.00. Terms. Yard.

## WENZEL MACHINERY

Rental &amp; Sales Co., Inc.

565-567 S. 10th Street, Kansas City, Kans.  
Mayfair 1-1710-1711

## SHOVEL

NORTHWEST - Model 80-D Murphy Diesel,  $2\frac{1}{2}$  yd. Dipper. 12,000 Series. Priced To Sell.

Anderson Equipment Company

P. O. Box 427 - Phone: LEhigh 1-6020  
Bridgeville, Penna. - (Pittsburgh Area)

# Roads and Streets Clearing House REACHES THE MARKET'S HEART

INDIVIDUAL CONTRACTORS

CITY, COUNTY ENGINEERS

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Long a leader serving the heavy construction and associated fields, ROADS AND STREETS' "cream" circulation goes to the important men in the business. They are the men, who directly or indirectly influence the purchase and sales of new and used equipment and supplies.

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360 in. ....	9.00

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NEW  
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Excellent Condition • Available Now

## BACKHOES

Bucyrus-Erie 22-B	
¾ yard, Good	\$1850.00
Lorain TL-25 Camelback	
Good	1750.00
Marion 372 1½ Yard, New	3750.00
Osgood 200 ½ Yard	
Complete, New	1500.00
Osgood 820 1½ Yard, Good	2750.00
P&H 255 Chain Crowd,	
¾ yard, Good	1000.00
P&H 855 BLC Camelback	
New	6500.00
NW-18 ½ yard, Good	850.00
Wayne ½ Yard Camelback	
Good	1500.00

## CRANE BOOMS

B-E 37-B Base Half, New	500.00
Kochring 205, ½ Yard, New	700.00
Kochring 304 Jib, New	250.00
Lima 34, 35' with Harness	
New	1250.00
Lima 604, 45', New	1250.00
Lima 604 Jib 10', New	350.00
Lima 750, 50' with Harness	
New	1500.00
Lorain 82, 50' with Harness	
New	2250.00
Lorain 820, Jib 15', New	350.00
Manitowoc 2000B, 40', Good	1000.00
Manitowoc 3000B, 10' Sections	
New	250.00
NW-18, 25', New	500.00
Osgood 200, 30', New	500.00
Orion 50' with Harness	
New	1500.00
P&H 150 TC, 25' with	
Harness, New	750.00
P&H 255A ¾ yard, New	850.00
P&H 255A TC ¾ yard, New	850.00

## SHOVEL FRONTS

Bay City 45 ¾ yard, New	\$1500.00
B-E 10-B, ¾ yard, New	600.00
B-E 22-B, ¾ yard, New	1145.00
B-E 37-B, 1½ yard, Good	2500.00
Bay City 20, ¾ yard, New	500.00
Buckeye 70 and Garwood 20A, New	850.00
Garwood 75-B ¾ yard, New	750.00
Kochring 701 2-yard, New	3500.00
Lima 604 1½ yard, Good	3000.00
Lima 34, ¾ yard, New	1500.00
Lima 802 HiFront, Good	5500.00
Lorain 820 2-yard, New	4000.00
Lorain TL-25, ¾ yard, complete, New	1250.00
Lorain 80, 1½ yard, Good	2500.00
Link-Belt LS-85, ¾ yard, New	1500.00
Marion 372, 1¾ yard, Good	2500.00
NW-25, ¾ yard, New	1000.00
Insley K-12, ½ yard, New	750.00
NW-6 with 2-yard Dipper, New	4500.00
NW-78D with 2-yard Dipper, New	4500.00

## FAIRLEADS:

Bay City 45; Lima 34; Marion 342; Marion 372; NW-80-D; NW-6; Marion 40A; Link-Belt K-370; Kochring 604; B-E 44B; Lorain 41; Garwood 75-B; Lorain 820; Manitowoc 3500-B; Lima 604; P&H 855 LC; Osgood 200; Osgood 50; General 307; Orion 22 G.

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## DRAGLINE MATS

Any Length, Width or  
Built to Specifications.

We build them a little better for a little less.  
STRICTLY HARDWOOD.

Also LUMBER and PILING

Kent Piling Co., Inc.  
T. W. "TOM" KENT, PRESIDENT

Phone Days: Amite 2641 - 2644 - Night 8454  
FLUKER, LOUISIANA

## FOR SALE

Concrete Paving Equipment including  
Airport Forms, Spreader, Transverse  
and Longitudinal Finishers 12' to 25'  
and all incidental machines. 38B  
Bucyrus Erie Crane, Northwest Model  
25 with Boom and Backhoe, Interna-  
tional Tractors and Galion Grader,  
Base Spreaders and Compactors. For  
full details contact Central States Con-  
struction Company, Willmar, Minn.

## FOR IMMEDIATE SALE

CAT. D7 Loader Tractor, Ser. #7M-  
2913SP (2 Cu. Yd.) ..... \$ 2,000

CAT. D8 Tractor W/Double Drum  
Power Control Unit, Ser. #8R6988  
..... 4,500

CAT. D8 Tractor W/Double Drum  
Power Control Unit, Ser. #2U3056  
..... 5,250

CAT. D8 Tractor W/Double Drum  
Power Control Unit, Ser. #2U4338  
..... 5,750

FOOTE Dual Drum Concrete Paver,  
Ser. #46D506 ..... 7,500

NORDBERG Railroad Track Shifter,  
Ser. #319 ..... 4,000

ALLIS CHALMERS Tractor, Mod. HD-  
21, W/Dozer and Ripper, Ser.  
#7702 ..... 19,000

ALLIS CHALMERS Tractor, Mod. HD-  
21, W/Dozer, Ser. #7495 17,500

JAEGER-LAKEWOOD Concrete Finish-  
er (12 feet) ..... 3,000

ROSS Carrier, Ser. #93569. 3,750

EUCLID Tractor, Ser. #6FTD-883  
..... 3,750

PETERBILT Truck Tractor, Ser. #L-  
2197 (Model 360) ..... 13,000

NORTHWEST Mod. 25 Power Exca-  
vator W/Clamshell (60' Boom) and  
Backhoe Attachments, Ser. #11498  
..... 13,000

NORTHWEST Mod. 78 Power Shovel,  
Ser. #7907 ..... 14,000

(Sales and Other Taxes, if applicable,  
to be added to prices shown)

## EATON AND SMITH

1215 MICHIGAN STREET  
SAN FRANCISCO, CALIF.

## FOR SALE

1—Ferguson Tractor, Mtd., Trench Hog	\$ 1,800.00
1—Unit Back Hoe, ¾ yds., 80% New, CMC Diesel	12,000.00
1—½ yd. Link Belt Back Hoe, Cat Diesel engine and 40 ft. boom, extra good condition	8,000.00
1—10-B ¾-yd. Back Hoe with 36" Bucket and 22" Bucket Boom, Case Diesel good condition	6,000.00
1—Case ¼ yd. Back Hoe on rubber, A-1 condition, Case Diesel motor, practically new Back Hoe	5,000.00
1—Ferguson Tractor Phippen ¼ yd. Back Hoe mounted on rubber	2,200.00
1—Case 500 Crawler Highlift, prac- tically new Diesel	6,000.00
1—Ferguson Tractor Mounted High- lift	1,800.00
2—Low-Boys for sale - Write for price.	

All Types of Construction Equipment  
For Sale.

St. John Tractor & Equip. Co.  
P. O. Box 3065, Johnson City, Tenn.



# A LARGE AUCTION CONSTRUCTION EQUIPMENT

SATURDAY, APRIL 11, 9:30 A. M.

CHICAGO, ILLINOIS

**LOCATION:** The O'Neil-Winkelman Joint Venture equipment yard off the Illinois Toll Road, near the Elmhurst Rd. Turnoff. This is 20 mi. NW of the Loop, 5 mi. NW of O'Hare Airport, or 5 mi. S of Des Plaines.

**NOTICE:** The O'Neil-Winkelman Joint Venture for the Illinois Toll Highway has finished its work and is dissolving and selling all equipment in this auction.

**EACH PIECE POSITIVELY SELLS TO THE HIGHEST BIDDER WITHOUT LIMIT, MINIMUM OR RESERVATIONS!!!!**

## DRAGLINES

P&H 955ALC Crane-Dragline, S/N 17829, with Cat D-337 power, very good; Lorain L-820 Crane, S/N 15740, with Cat power, good; Marion 33M Crane-Dragline-Backhoe, fair; Buckets.

## MOTOR SCRAPERS—BOTTOM DUMP UNITS

4 Cat DW-20 Motor Scrapers, all 21C's & good; 4 Euclid 108W Bottom Dump Wagons adapted to DW-20 Tractors, good; 8 Euclid 14TDT Tractors with 122W Bottom Dump Wagons, good; 8 Euclid S-18 Scrapers adapted to 14TDT Tractors, used little & excellent; 2 Euclid S-7 Motor Scrapers, good; 2 LeTourneau C-Roadster Tournapulls, fair; LeT 'M' Scraper.

## TRACTORS—LOADERS—GRADERS

2 Cat D-8's, 2U's with Dozers & CCU's; IHC TD-241 with Torque, dozer & PCU; 2 AC HD-21 Pushers, good; AC HD-19 Pusher; AC HD-5B w/ dozer; AC HD-5G Loader; Michigan 175-AD Loader, very good; AC WD-45 w/Loader & Backhoe; Ferguson 30 w/Loader; 5 Cat 12 Graders to 8T 17330, all w/ scarifiers.

## JOHNSON 150 YD. AUTOMATIC BATCH PLANT

C.S. Johnson Model TY Automatic 3-Way Batch Plant, S/N TY276, in very good condition. Most components were new in '56 & '57. There are 164' & 195' Charging Conveyors & extra DD Screen.

## CONCRETE PAVING EQUIPMENT

2 Foote 45E Dual Drum Pavers, S/Nos. 5005 & 46D-803, w/ GMC Diesels, Modifications, both used little & very good; Foote 34E 1-Drum Paver,

poor; Heltzel 'Detroit Special' Finisher, good; Blaw-Knox XC Finisher; Barber-Greene 24"x64' Concrete Conveyor; Blaw-Knox 10x10 & 9x9 Forms; Metaform 9x14 Forms; Cleveland Form Tampers; Clary YR Screed; Concrete Carts; Mixers; Vibrators, Grinders; Dumpcrites; Many other items.

## EUCLID LOADER—ROLLERS

Euclid 10BV Loader, S/N 188, w/ Cummin NHBIS, good; Bros 50 T Compactor; Roscoe 25 T Compactor; Buffalo-Springfield 10-12 T 3-Wheel, 5-8 T & 3-5 T Tandem Rollers; Vibro-Plus Vibratory Roller; Jackson elec. Compactor; 4 LeTourneau & Bros 60" DD Sheepfoot Rollers.

## MISCELLANEOUS

Hobart & Lincoln Welders; Generators; Pumps; LeROI 125 Tractor; I-R 60 Compressor; Grinders; Saws; Rome Disc; Jersey Spreader; Mulch Spreader; Broom; Earth Auger; Hoists; Many other items.

## RADIO & OFFICE EQUIP.

GE Model 4ET7D3 Base Transmitter & Receiver; 80' Mast; 13 Portable units; Calculators; Adding Machines; Other items.

## TRUCKS—TRAILERS

10-'58 Ford F-600 Dump Batch Trucks, very good; 2-'56 Ford T-800 Tandem Dump Batch Trucks; 3 Ford Flat-Dump Trucks; 1 HC 6x6 Alemitte Field Lube Truck; Ford T-800 & Euclid Water Trucks; '54 White & 2-'51 IHC Tandem Tractors; 2 Highway 120 Bbl Bulk Cement Trailers; 2 Highway Vans; 2 Caravan Office Trailers; Pick-ups; Autos; Others.

**WRITE - WIRE - CALL** Auctioneers for complete list. **INSPECT** at any time.

**TERMS:** Complete Payment Sale Day.

**EACH PIECE POSITIVELY SELLS TO THE HIGHEST BIDDER WITHOUT LIMIT, MINIMUM OR RESERVATIONS!!!!**

**FORKE BROTHERS**  
*the Auctioneers*

321 Sharp Bldg. Lincoln, Nebraska Phone 2-1045

— EQUIPMENT AUCTION LEADERSHIP SINCE 1921 —

O'Neill-Winkelman, Owner  
(Joint Venture for Ill. Toll Highway)  
Chicago, Ph: Eastgate 7-1611

## EQUIPMENT FOR SALE

**XA-5876—CATERPILLAR D8 TRACTOR**, Serial No. 8R9629, Tractor in good running condition. Has good tracks. .... \$ 5,000.00

**XZ-5759—CATERPILLAR D8 TRACTOR**, Serial No. 2U6109, equipped with #24 Cable Control, 85 Dozer, D8L Towing Winch and Selby Top. Tractor has been completely reconditioned. .... 12,500.00

**XA-5910—CATERPILLAR D8 TRACTOR**, Serial No. 8R964, equipped with LeTourneau Double Drum, 85 Dozer. .... 7,000.00

**XZ-5912—CATERPILLAR D8 TRACTOR**, Serial No. 8R2240, equipped with 85 Dozer, and #25 Cable Control. Dozer is latest type Caterpillar make. Tractor has new sleeves and pistons. Tracks have only 30 days wear. .... 8,250.00

**XA-5913—CATERPILLAR D8 TRACTOR**, Serial No. 2U10113, equipped with 85 Dozer, #24 Cable Control, and Model J Carco Towing Winch and Selby Top. Tractor has new sleeves and pistons and tracks. .... 16,500.00

**XA-5899—CATERPILLAR D7 TRACTOR**, Serial No. 7M857, equipped with #24 Cable Control, Straight LeTourneau Dozer, Hyster Towing Winch and Selby Top. Tractor has been completely overhauled. .... 10,500.00

**XA-5790—CATERPILLAR D7 TRACTOR**, Serial No. 3T15194, equipped with #24 Cable Control, 75 Dozer, Hyster D7N Towing Winch, Selby Top. .... 12,500.00

**XA-5522 — ADAMS 312 MOTOR GRADER** with scarifier and cab. Reconditioned. .... 2,950.00

**XA-5711—CATERPILLAR #11 MOTOR GRADER**, Serial No. 6K446 with Scarifier and Cab. Good condition. Will accept a reasonable offer on this machine. .... 1,775.00

**XA-5849 — CATERPILLAR NO. 12 MOTOR GRADER**, Serial No. 9K1005 equipped with power steering. Has new pistons, liners, clutch and new drawbar. Tires good. ... 8,000.00

**XA-5911 — OLIVER TRACK-TYPE TRACTOR**, equipped with front end loader .... 1,750.00

**MA-5730 — HYSTER D8D TOWING WINCH**, Serial No. A51P-1586A with built-in drawbar and automatic brake. This winch is new. Has never been in service. .... 3,450.00

**XA-5263 — SKAGIT MODEL BU15 LOADER** with Double Drum and lever controls. Powered with Ford Industrial Engine. Will consider any reasonable offer. .... 1,750.00

In addition to the above items we also have a stock of used Caterpillar parts for D8 Tractors.

Terms will be extended to customers with good credit ratings.

All items subject to prior sale.

**SIERRA TRACTOR & EQUIPMENT CO.**  
P. O. BOX 713 • CHICO, CALIFORNIA

## FOR SALE

### Kochring 304 Crawler Crane

With GMC diesel power. 60' boom and fairleads. If you are planning to buy a new machine, buy this one, you cannot tell the difference, at less than half price...\$16,500.00

**Tri-State Supply Company**  
P. O. Box 81 - Yardville, New Jersey  
JUniper 7-7100 - Dolens or Mechler

## YOU CAN BUY

### Government Surplus ANYONE IS ELIGIBLE

"3 billion to be sold" is the estimate for '58-'59. Weekly letter tells what is being sold, when, where and who to contact.

\$7 for 3 mo. \$25 per yr.

**GOVERNMENT  
SURPLUS SALES**  
P. O. Box 6602D  
WASHINGTON 9, D. C.

## STEEL SHEET PILING

### FOR SALE OR RENT

1790 pos. 58 to 49 ft.	Carn. MP-101	New York
148 pos. 60 ft.	Beth SP-4	West Va.
428 pos. 60 to 35 ft.	Carn. MP-116	Illinois
148 pos. 60 to 50 ft.	Beth. AP-3	New York
160 pos. 60 to 50 ft.	Carn. MP-115	Indiana
243 pos. 60 ft.	MP-116 & MP-115	Tennessee
598 pos. 48 to 30 ft.	Z-27 & Z-32	Louisiana
563 pos. 48 to 40 ft.	Z-32 & Z-27	Maryland

Other lengths and selections at other locations including storage yards at BUFFALO - BALTIMORE - NEW ORLEANS - MEMPHIS - CHICAGO.

McKernan - Terry and Vulcan Pile Hammers and Extractors Construction and Railroad Equipment.

We are as close as your telephone—you can obtain Steel Sheet PILING BY DIALING CHENOT 1-4474, St. Louis, Mo. COLLECT

### MISSISSIPPI VALLEY EQUIPMENT CO.

1504 Railway Exchange Bldg.  
St. Louis 3, Mo. CHENOT 1-4474

### ATTACHMENTS AVAILABLE

Northwest - Bucyrus-Erie - Lima - Marion  
- Link Belt - Lorain - P&H - Manitowoc  
Shovels - Backhoe - Clam Drag - all sizes.

**JAMES C. FRENCH**  
P. O. Box 183  
226 Berry Pkwy. Talcott 9-4927  
PARK RIDGE, ILLINOIS

## WINCHES

### IN OUR HOUSTON STOCK

### STEAM HOISTS

1—10x12 Washington 3-Drum, 20,000# SLP  
1—10x12 Mead-Morrison 3-Drum, 14,000# SLP  
3—8½x10 Clyde 3-Drum, 9,500# SLP  
1—6x8 Lidgerwood 2-Drum, 6,000# SLP  
1—7x9 Clyde 2-Drum 9,000# SLP  
2—8½x10 Clyde 2-Drum, 16,000# @ 40 FPM  
1—10x12 Lidgerwood 2-Drum 1,4,000# (Located Detroit)

### ELECTRIC WINCHES

10—Clyde 1-Drum, 30 HP to 60 HP, all 220 or 440 volt, 3 phase, 60 cycle AC - 4000# to 7500#  
12—Vulcan 1-Drum, 14,000# @ 105 FPM with 50 HP, 230 volt DC motors. (New.)  
3—Markey 1-Drum, 6,000# @ 40 FPM with 35 HP, 230 volt DC motors and controls.  
3—Electro-Lift overhead trolley hoists, 6000# 17' lift, 208 volt, 3 ph., 60 cy. (New.)  
3—Almon A. Johnson LST winches, 100,000# @ 10 FPM, 1-Drum, 50 HP, 230 volt DC motors.  
2—Jaeger 1-Drum Towing winches, 32,000# @ 10 FPM, 5 HP, 115 VDC motors.  
6—Bayard 1-Drum, 15,000# @ 42 FPM, 20 HP AC or DC motors.

### GASOLINE & DIESEL HOISTS

3—Jaeger 1-Drum, 50,000# @ 10 FPM with 150 HP Continental Gas Engine and Torque Converter.  
4—Jaeger 1-Drum, 32,000# @ FPM with 119 HP Hercules Gas Engine and Torque Converter.  
1—Washington 4-Drum, 50,000# @ 40 FPM with Caterpillar D-13,000 Diesel.  
1—OK Hoist, 2-D, 8,000# @ 200 FPM with JXD Hercules Gas Engine.  
1—Skagit 1-Drum, 23,000# SLP with Case Engine.  
4—Bayard 1-Drum, 16,000# with Hercules Engines.  
1—Jaeger 1-Drum, 13,000# with Continental Engine.  
1—Link-Belt 3-Drum, 60,000# with JT-6 Cummins Diesel, Drums hold 4500' of 1" cable.  
1—Lidgerwood 3-Drum, 12,000# @ 250 FPM with Gas or Diesel Engine.  
1—CHGE 2-Drum, 2500# with Wisconsin Engine.  
4—Lidgerwood 1-Drum, 5,000# with Waukesha Engines.

### MISCELLANEOUS EQUIP.

40—Anchor Windlasses for 1" to 1¼" chain—all electric powered.  
32—Capstans - Hand and Electric Powered.  
4—Clyde Swinger Attachments, 10,000# @ 40 FPM.  
1—Buda Model 1879 Diesel complete, 200 HP.  
24—Maxim Silencers for 6-71 GM Diesels (New) - \$40.00 each.  
1—Webster-Brinkley Steering Gears for 80 to 100 ft. vessels (new).  
1—Reeves Vari-Drive, 50 HP, 6 to 1 ratio.

## MacMab, Inc.

MI 9-2706 - P. O. Box 14357  
7225 Chocolate Bayou  
HOUSTON 21, TEXAS  
Attn.: Jim Mabry

## TRUCKS WANTED

Highest dollar value paid for new and used trucks and all kinds of used equipment. All types of truck equipment bought and sold, including war surplus. Write, phone or wire:

### BILL FISHEL

### Vandevanter Auto Sales

717 So. Vandevanter St. Leola 10, Mo.  
Ph. FRanklin 1-1750

## GOOD USED MACHINERY FOR SALE OR RENT

Used D-6 CATERPILLAR Tractor with traction excavator, Mach. No. 9V2885. Condition Good.

Used BARBER GREENE Model 550 Belt Loader No. 550-5554. New Machine guarantee. Demonstrated only.

Used BARBER GREENE Model 705A Ditcher, No. 705A-51-31 Le Roi gasoline engine 7 1/2 x 48" and 5 1/2 x 18" bucket line, cab, spoil conveyor, back-filling blade. Reconditioned.

Bucyrus ERIE 3/4 cu. yd. Dragline bucket type AX, No. BB-5. New. Yard Worn. Excellent price.

Shovel Attachment for 205-A Koehring, complete. Machine No. C-4908-4131. LIKE NEW. Used once.

KOEHRING 301 Combination Dragline-Clamshell, 50' boom (Spare Parts for engine and machine), powered with Wisconsin Radiator Cooled Engine. Machine No. 1539. RUNNING.

Used SCOOPMOBILE Model "C" mounted on pneumatic tires, Chrysler gasoline engine, No. C-4634. Reconditioned.

Used BROS Model 26-T portable steam generator, Wisconsin gasoline engine, mounted on two pneumatic tired trailer. Reconditioned.

Used KIESLER Clamshell bucket, material handling type 1 1/4 cu. yd. capacity, size 750, No. 2233. Condition, Excellent.

Used BLAW-KNOX Concrete Finisher model XE-20'-25' with hydraulic transportation wheels. Intergal curb attachment, machine new 1956. Laid less than 10 miles. Condition Excellent.

Write, Wire or Phone For Prices

## FUCHS-CLAYTON MACHINERY COMPANY

901 South 40th Street

Phone HARney 8733

OMAHA, NEBRASKA

### CEDAR RAPIDS TRAVEL MIX MACHINE

120 Ton capacity 6 DT-909  
Buda Engine, 17 ft.  
Pugmill, 1000 gal.

Insulated Heated Tank  
Good condition. Price \$12,000.

**BAR-COAT BLACK TOP CO.**

Box 475, Mosinee, Wisconsin

### FOR SALE

1 Ton McCarter Asphalt Mixing Tower complete with Robbins 3x10 D Deck Screen, Howe Dial Scales, Modern asphalt spray type weigh bucket, 60 ton per hour elevator—Available for Immediate Delivery.

### TRI COUNTY ASPHALT CORP.

Roseland, N. J.

Capital 6-5555

### TANDEM TRUCKS

4—1936 RF195 IHC Truck, 157" W.B. RD-501 Engines, FA-110 Front Axle (11,000#) Air Brakes, 15" Clutch, T63 Transmission, A519 Auxiliary - 3-Way RA310 Rear Axle - Tires 11x22.5 Front, 10x22.5 Rear.

5—1933 IHC 195 Diesel Tandems, Cummins Diesel Engines, 157" W.B. 2A45 Auxiliary, F54 5-Spd. Transmission, Air Brakes, 28M Axle - Tires 10:00x20 Front, 9:00x20 Rear.

4—1936 T800 Fords with 8 to 10 yd. new Anthony dump bodies.

7—1936 F-900 Fords with Tag Axle F54-5 Spd. Transmission, 3-Way Auxiliary Transmission. Equipped with 8-10 yd. Anthony Dump Bodies.

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### 1201 DRAGLINE

LIMA - Model 1201 Dragline, Cummins Diesel, 75 ft. Boom, 3 1/2 yd. Page Bucket. Good running condition. Reasonable.

### Anderson Equipment Company

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### FOR SALE

### PETTIBONE WOOD SPEED MIXER

MODEL 710

Powered with GMC 4057C  
4-cylinder diesel engine

This machine has been used  
less than 30 days

**PRICE \$10,000.00**

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# BLUE BELL WIRE ROPE NET PRICE DELIVERED EXAMPLE:

Improved Plow—Preformed—Regular or Lang Lay

DIAM.

1/2

9/16

5/8

3/4

7/8

6 x 19 or 6 x 21 or 6 x 25

6 x 37

Hemp Center

Wire Center

Hemp Center

2500 over

651-2499

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2500 over

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2500 over

651-2499

0-650

\$ .125

\$ .145

\$ .155

\$ .155

\$ .175

\$ .185

\$ .160

\$ .180

\$ .190

.140

.160

.170

.175

.195

.205

.185

.205

.215

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.180

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.210

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.245

.255

.270

.290

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.285

.305

.315

.285

.315

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All sizes and constructions in stock—SEND FOR PRICE LIST.

Prices apply to each cut length regardless of total quantity purchased.

Manufacturer approved by Lloyds Register. WIRE TESTED AND INSPECTED.

TEST CERTIFICATES ON REQUEST. Deliveries made IMMEDIATELY FROM STOCK.

**SLINGS—Made to Order—6 x 19 Construction**

Length of Sling - 18 Inch Eyes - 12 Inch Eyes

4'

6'

8'

10'

12'

14'

16'

18'

20'

\$1.80

\$2.00

\$2.20

\$2.40

\$2.60

\$2.80

\$3.00

\$3.20

\$3.40

2.58

2.82

3.06

3.30

3.54

3.78

4.02

4.26

4.50

3.50

3.80

4.10

4.40

4.70

5.00

5.30

5.60

5.90

5.80

6.20

6.60

7.00

7.40

7.80

8.20

8.60

8.25

8.75

9.25

9.75

10.25

10.75

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Slings of all sizes and types—prices on request. All slings F.O.B. New Cumberland, Pa.

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## GOOD USED EQUIPMENT

- (3) **P & H Model 555 TRUCK CRANES**, 35 Ton Capacity, w/80' Boom, Powered with 145 GK Wauk., Power Steering, Removable Hydraulic Counterweights.
- (1) **LORAIN Model 504W**, 25 Ton Truck Crane, 70' Boom, Powered with GK140 Wauk. in Upper and 145 GK Wauk. Downstairs, Rubber 95% of New, EXC. COND.
- (1) **P & H Model 1055 Long Crawler**, 90' Boom, 4 Yd. Drag Bucket, Fairleads, Excellent Condition.
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- (2) **WOOLRIDGE Model TCR** 14-17 Yd. Scrapers, 18.00-x24 Duals.
- (3) **EUCLID Model S-18**, 18-25 Yd. Scrapers, Midwest Location. Price \$22,500.00 Ea.

**THOMAS J. PALMER COMPANY**  
Construction Machinery Sales  
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### VULCAN AND McKIERNAN-TERRY Steam Pile Hammers and Extractors

- DROP HAMMERS
- STEEL LEADS
- DRIVING CAPS
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- HOISTS AND BOILERS

## STEEL SHEET PILING

Pcs.	Section	Length	Location
200	MP-116	50 to 60 ft.	Kansas City
200	MP-115	50 to 60 ft.	Kansas City
150	MP-112	50 to 60 ft.	Chicago
450	MP-116	35 to 60 ft.	Chicago
175	MP-115	50 to 60 ft.	Chicago
180	MP-112	19 to 20 ft.	Nebraska
1300	SP-6a	15 to 47 ft.	New York

## CONMACO, INC.

PHONE DRexel 1-3940  
814 Kansas Ave., KANSAS CITY, KANSAS

## FOR SALE ONE LORAIN, MODEL 820

Serial 16017 powered by Waukesha diesel model WAKD engine, Serial #707400 with gas starting engine. This machine is equipped with 23' shovel boom, 18" dipper stick and 2 yard Amsco bucket. Crawler mounted with 15'6" length crawlers and 11'4" width 34" treads. Weight 114,500 pounds. This machine is eleven years old and was rebuilt in 1955. \$12,000 was spent on machine itself and \$2,400 on motor. Since rebuilding, this machine has been used for a standby and has been used only about 1000 hours.

Price: F.O.B. Detroit, Michigan "As Is"

**\$19,500.00**

CONTACT: Leon Wyatt

## WOLVERINE TRACTOR & EQUIPMENT COMPANY

Box 4705 Redford Station  
DETROIT 19, MICHIGAN  
Phone: KEnwood 4-8400 Day  
KEnwood 7-2046 Night

## FOR SALE EUCLID TRUCKS

- 3—63TD 22½ ton, w/GMC Engines, Allison converters. New 1955-56.  
4—63TDA 22½ ton, w/GMC Engines, Allison converters. New 1955-56.  
9—60TD 22½ ton, w/Cummins 300 H.P. Engines, Fuller trans. New 1955-56.  
4—2FFD 35 ton, w/400 H.P. Cummins engines, S/N 11403, 11406, 11409, 11419.  
14—27FD 15 ton, w/Cummins diesel engines. All rebuilt. Bargain.

## Shovels & Draglines

- 9W Bucyrus Erie 13 yd. Elec. Dragline.  
631 Page 8 yd. Elec. Dragline.  
625 Page 9 yd. Diesel Dragline.  
170-B Bucyrus Erie 6½ yd. Shovel.  
120-B Bucyrus Erie 5 yd. Elec. Shovel.  
2400 Lima 6 yd. Dragline.  
4500 Manitowoc 5 yd. Dragline.  
111-M Marion 4 yd. Diesel Dragline.  
1201 Lima 3 yd. Diesel Dragline.  
595 Linkbelt 2½ yd. Dragline.  
93-M Marion 2½ yd. Shovel.  
54-B Bucyrus Erie 2½ yd. Dragline.  
3500 Manitowoc 2½ yd. Dragline.  
38-B Bucyrus Erie 1½ yd. Comb. Shovel & Dragline.  
1000 Osgood 2½ yd. Standard Shovel.  
80-D Northwest 2½ yd. Shovel.  
95 Northwest 2½ yd. Dragline.  
Model 6 Northwest 1½ yd. Shovel.  
25 Northwest Comb. ¾ yd. Shovel & Drag.  
604 Lima 1½ yd. Shovel.  
604 Lima Lifting Crane.  
22-B Bucyrus Erie ¾ yd. Shovel.  
200 Osgood Comb. ½ yd. Shovel, Drag, Backhoe.  
155A P&H ½ yd. Backhoe.

## Miscellaneous

- Reich High Mast Rotary Drill. Truck Mounted.  
Joy Challenger Rotary Drill.  
42-T Diesel 9" Drill. Hydraulic Jacks.  
27-T Diesel 6" Drill. Hydraulic Jacks.  
D-9 Cat. Angle Dozer.  
D-8 Cat. Cable or Hyd. Dozer.  
HD-19 Hyd. Dozer.  
D-6 Cat. Cable Dozer.  
D-7 Cat. Cable Dozer.

**FRANK FAMALETTE EQUIPMENT COMPANY**  
Hazleton, Pa. GL 5-4708



# TWO AUCTIONS

## VERY GOOD HEAVY EQUIPMENT

**MONDAY, MAY 4th, 10 A.M., DENVER, COLORADO,** East 64th Avenue & Kearney. The Monaghan and Smith Construction Co., is quitting business completely and selling all equipment, large and small. Each piece positively sells regardless of price to the highest bidder. **WRITE—WIRE AUCTIONEERS FOR COMPLETE DESCRIPTIVE SALE LISTS.**

**ASPHALT PLANT:** Cedarapids Model G-60, 6,000# complete asphalt plant bought new and put on the job in 1957, has been used only 1½ seasons. This is a portable plant all complete in every respect including automatic batching and control equipment all electronic for automatic weighing and fully automatic mixing.

**CRUSHING EQUIPMENT:** CEDARAPIDS COMMANDER portable crusher, put on job in 1957, with 1036 jaw, 3025 crusher, 48"x10' Cedarapids 2½ vib screen, all complete & very good. IHC UD-1091 power unit on trailer. CEDARAPIDS MASTER TANDEM Crushing Plant, has 1036 jaw, 4022 crusher, 48"x12' double deck vib screen, feed conveyor, Very good condition. IHC-UD-1091 Turbo charged power unit on truck. 24"x40' & 30"x40' conveyors.

**ASPHALT EQUIPMENT:** CEDARAPIDS BSF-2 FINISHER, new in 1957, like new. BARBER GREENE finisher, 879B, new in 1957, like new. GALION CHIEF 3 wheel 10 ton roller, torque, used 1½ seasons. 2 GALION TANDEM 8-10½ ton rollers, torque, used 1½ seasons both like new. ROSCO SR-9-0 self prop 9 wheel pneu roller—like new. ROSCO RQE 1250 gal. Distributor New in '56 on '47 IHC

truck. Other equipment.

**DRAGLINES — TRACTORS — GRADERS — LOADERS:** NORTHWEST 6 DRAG, 60' boom, Cat D13000; LIMA 44 DRAG, 70' boom Cat D318, NEW 1957, 1607 hours; LIMA 34 DRAG, 70' boom, Cat D318, 4224 hours; LS 75 DRAG, 40' boom, UD14. 2 CAT D8's w/dozers, 14A-4869 & 2U-21257; CAT D-6, 8U w/hyd. dozer; 2 CAT #12 MOTOR GRADERS, OIL CLUTCH 8T's. 2 HOUGH LOADERS, HR & HM.

**CONCRETE BATCH PLANT — TRANSIT TRUCKS:** HELTZEL BATCH PLANT, all complete w/285 barrel cement silo—good. CMC BATCH PLANT, all complete w/150 bbl cement silo—good. 3 Rex & 1 CMC 3 yard transit mixers on trucks. Other cement equipment.

**TANDEM DUMP TRUCKS—LOWBOYS:** 10 IHC VF-190A 175"—1957 dump trucks w/Anthony 8-10 bodies, all very good. 2 '52 IHC LF195, 1953 RF211 tandem dump trucks. 10 other trucks & dump trucks; Water Trucks; 3 '57 Ford Cars; '54 IHC tandem truck-Tractor, RDF-405, Cummins diesel, Tulsa 15 winch—good. Other truck-Tractors.

There are many, many other pieces both large and small. This is an exceptional sale of late equipment in very good condition. Write—Wire for full sale lists.

**MONAGHAN & SMITH CONSTRUCTION CO., Owner**  
Phone Atlas 82694, DERBY, COLORADO.

**WEDNESDAY, MAY 6th, 10 A.M., PUEBLO, COLORADO,** 3 miles North of Pueblo on US Highways 85 & 87. The Nowers Construction Company is quitting the contracting business completely and selling all equipment. Each Piece Positively Sells regardless of price. **WRITE—WIRE AUCTIONEERS FOR FULL SALE LIST.**

**MOTOR SCRAPERS—SCRAPERS:** 2 EUCLID 23TDT Motor Scrapers, S/Nos. 18831 & 17981, GMC 300 hp 6094 engines, are good w/very good tires. EUCLID 12TDT Motor Scraper, S/N 15887 w/GMC 6-110 200 hp engine, good w/very good tires. EUCLID 8TDT & 7TDT Motor Scrapers, have Cummins 275 hp engines, good w/good tires. CAT 80 Scraper. Lett-Westinghouse BT Scraper new '56, 15-18 yard.

**TRACTOR-LOADER:** IHC TD24, S/N TDC-241-1247, torque, turbo charger, front & rear C frames—Tractor New in Sept. '57—Very good; 5 CAT D-8's, 2 15A torques w/push blocks, 2 13's w/8A & 8S dozers, 2 2U's, 1 w/dozer & an 8R. Lett-WESTINGHOUSE Tournadozer,

CW, MACHINE USE ONLY 60 DAYS; AC HD6G loader tractor; Wheel tractors.

**GRADERS—ROLLERS—MISC.:** 3 CAT #12 Motor Graders, S/No's 70D1618 & 8T-17146 both w/oil clutch, 8T3439. GRACE & FERGUSON 50 TON Pneu compactors. Rosco SR-90 self prop. pneu. roller; Terra Pac Vib steel roller; Lett K-30 ripper; 2 McCoy 5x5 dd sheepfoots; 1-R 125 cfm rotary compressor. Many many other small items.

**TRUCKS—TRAILERS:** IHC WEST COAST TANDEM TRUCK TRACTOR, Model 4564-OH, Braden winch—good; TIMPTE 50 Ton Tandem lowboy; Fuel trucks; tank trucks; welder trucks; pickups; other trucks.

This, also, is a sale of very good late model and very well maintained equipment. Write—Wire auctioneers for complete descriptive lists.

**NOWERS CONSTRUCTION CO., Owner**  
Phone Lincoln 40325, PUEBLO, COLORADO.

**FORKE BROTHERS**  
*the Auctioneers*

331 Sharp Bldg. Lincoln, Nebraska Phone 2-1645

— EQUIPMENT AUCTION LEADERSHIP SINCE 1921 —

Each piece positively sells to the highest bidder regardless of price — No minimum — Limit-or-reservation.

## CONCRETE BATCHING PLANT FOR SALE

A great purchasing opportunity at 50% of original cost. Purchased in July 1957 at a cost of \$165,000.00. It has very low yardage as well as low mileage on ready mix trucks. Complete in every detail, right down to the switches and boxes and wiring.

- 1-4 comp., 110 yd. bin with 3 aggregate, one cement comps. Cleveland vibrator, Thurman batch recorder, moisture meter, admix injector and pump, heating coils, 60 hp cyclotherm boiler, heat exchanger, recirculating pump, 1-600 bbl. circular cement storage bin, 1-450 bbl. cement storage bin, 1-275 bbl. per hour bucket elevator, 21 ft. screw 9" dia. with two truck receiving hoppers, down-spouting and three way flap gate. One 10 yd. truck hopper for aggregate with rec. feeder and 7 1/2 hp motor. One 145'x24" truss type conveyor, complete with supports, walkway, 7 ply heavy duty belt, 15 hp motor and drive. One automatic three way aggregate distributor with air rams and solenoids.
- (6) - 7 cubic yard C.M.C. truck mixers, 290 gal. water tanks, automatic controls, Ford engines, automatic Neptune water meters, front water injection revolution counters on International 205's, tandems, heavy rears and transmission. 10x20 tires, very low mileage. 5 - 12,000 miles.

### ALSO - FOR SALE

- Erie 202 yd. 6 comp. batching bin, 4 aggregate, 2 cement, brand new, never erected. Fully automatic, 6 yd. batcher, bucket elevator, 2-1000 bbl. cement storage, complete in every detail. New cost \$39,000.00 ..... \$27,000.00
- 10-1952 Worthington 5 yard Mixers on 1952 Ford Tandems, in very good condition —For state work — Each ..... 2,700.00

### CALL OR WRITE:

## CONSTRUCTION EQUIPMENT SALES CO.

313 South Midler Ave. — Syracuse 6, New York  
Anytime - Phone: HOward 3-8202  
Syracuse Is Served By American, Eastern & Mohawk Airlines

## FOR SALE

- 2-Cat. DW21 Tractors, Serial 8W135 and 8W689. Very good condition. Price \$30,000.00 each.
- Cat. D311R Diesel Power Unit, Serial 75-7377. Very good condition. Price \$1,750.00.
- Cat. D315R Diesel Power Unit. Serial 9S-8373. Very good condition. Price \$2,000.00.
- Cat. D318Y Diesel Power Unit, Serial 5V-7107. Very good condition. Price \$2,500.00.
- Gardner-Denver 365 Cu. Ft. Air Compressor, Serial #84307, with Cat. D13000 Diesel Engine. Very good condition. Price \$5,000.00.
- Shovel Front Attachment, for Bucyrus-Erie 22B, with both standard and wide coal buckets. Very good condition. Price \$1,500.00.
- LeTourneau LP Scrapers. Perfect condition. Price \$4,750.00.
- Barber-Greene 879A Finisher, Ser. 879-10-15. Good condition. Price \$4,000.00.
- Lima 802 Shovel, Serial #5050. Very good condition. Price \$20,000.00.

### GREGORY-POOLE EQUIPMENT CO.

P.O. Box 469 - Tel. TE 4-3447  
Raleigh, North Carolina

## BOTTOM DUMP EUCLIDS



- 4-13 Yd. Euclids @ 7,500 each  
Engines: 165 Cummins Diesel, Serial Nos. 4781, 4782, 4783 & 5047
- 1-13 Yd. Euclid @ \$8,500 each  
Engine: 200 Cummins Diesel, Serial No. 3329.
- Model No. All Five Tractors 25FDT  
Model No. All Wagons 58W

600 C. F. Chicago Pneumatic Rotary Air Compressor SN-58287—\$12,000

1-LeTourneau Ripper, Medium for D-7 Tractor @ \$1,000.00

2-Caterpillar No. 28 Rippers @ \$2,000 each

1-3/4 Yd. Shovel front for Model 41 Lorain

All above equipment in excellent operating condition and can be seen at our Yard, 718 Murfreesboro Road, Nashville, Tennessee

## McDOWELL & McDOWELL

P. O. BOX 1144, NASHVILLE, TENN.

PHONE AL 5-0304

## DIGGER TEETH

Replaceable - New  
Complete Assembly

Not Surplus

TOOTH WIDTH	WAS	NOW
2 1/4"; 2 1/2";		
2 7/8" 3"	\$16.38	\$8.19
3 1/2"; 3 3/4";		
4"; 4 1/2"	\$20.80	\$10.40
4 5/8"; 4 7/8"		
5"; 5 1/4"; 5 1/2"	\$25.32	\$12.70
6"; 7"	\$29.50	\$14.75

All Sales F.O.B. Cleveland.

## Amalgamated Steel Corp.

7835 Broadway-Cleveland 5, O.  
Phone: Michigan 1-8700

## FOR RENT or SALE

- 4 Ton Stiffleg Derrick, steel, w/double drum Clyde hoist, 600 ft. of 7/16 cable ..... \$2,700.00
- Sargeant Truck Crane on International 4 wheel carrier, 5 ton capacity. With outriggers 5,500.00
- 105 Chicago Pneumatic Compressor on rubber ..... 650.00
- 35 Ingersoll-Rand Compressor... 950.00
- 16 S. Smith Concrete Mixer on rubber ..... 450.00

All Types of Used Equipment For Sale At Bargain Prices.

Address All Inquiries To:

**J. J. TOLASH**  
Box 302 - Argo P. O.  
SUMMIT, ILLINOIS

## FOR SALE

- 3 Eimco 105 Tractor Excavators  
1 Eimco 105 Front End Loader  
7 Model D Tournapulls w/rear dump units  
2 T-D 9 Front End Loaders

Located in Southwest

### Frazier-Davis Construction Co.

1319 Macklind Ave. St. Louis 10, Missouri  
STerling 1-1950

## FOR SALE:

Caterpillar D-8, Like New, with #25 DDPDU & "CAT" Bulldozer. Sacrifice \$16,500. Terms Accepted. Call Gregory 3-0588, Mr. Russell, 3 Westminster Place, Passaic, N. J.

4-6 x 14 Simplicity VIBRATING FEEDERS.  
HYDRATED LIME PLANT 50 tons per day.  
35-Link Belt 10" SCREW CONVEYORS 10 1/2".  
Barber Greene 640 & 818 ASPHALT PLANTS.  
CRUSHING PLANTS: C. R. Jr. Tandem & Pitmaster; 38-V Pioneer; Iowa 1936, 1936 & 2936; Iowa 3030 Impactor. SYMONS 2', 3' & 4'. 3036 Dixie & 4033 C. R. HAMMILL'S. 54' Stedman. SHOVELS: 54-B electric, Lima 802, Koehring 606, N. W. 25. Many others.  
Crushers: Jaw; cone; gyratory; roll; hammermill; impactor; ball, rod & tube mills; screening, washing & crushing plants—Classifiers - Compressors - Conveyors - Cranes - Drills - Dump Cars - Dredges - Engines & Motors - Feeders - Generators - Hoists - Kilns & Dryers - Locomotives - Pumps - Screens - Shovels & Draglines - Transformers - Euclid Trucks.  
EQUIPMENT LIST SENT ON REQUEST  
**STANLEY B. TROYER EQUIP. CO.**  
Box 97 Phone 508 Crosby, Minnesota

## SPRING CLEARANCE SALE

### Five Cranes & Shovels

P&H "105"— $\frac{1}{2}$  yd. Trench Hoe, mounted Zeligson 6x6 Crane Carrier.  
LORAIN "TL-20"— $\frac{1}{2}$  yd. Trench Hoe, or Crane or Shovel.  
INSLEY "K-12"—Used  $\frac{1}{2}$  yd. Trench Hoe or Crane, 18" shoes, 8'2" wide, new 10/52, M.M. Gas Power, hoe attachment rebuilt, bucket is new.  
LORAIN "TL-25"— $\frac{3}{4}$  yd. Crane or Drag-line, Cat D315 power, 1951 model. Re-built.  
BANTAM "M-49"—Used  $\frac{3}{4}$  yd. Trench Hoe, mounted GMC 6x6 Truck.

### Five Front End Loaders

PETTIBONE "125"—Used Speedall,  $1\frac{1}{2}$  yd. Tractor-Shovel, 4-wheel drive, Torquematic Transmission, Cab, Hard Rock Lug Tires, Hercules gas. New 8/57.  
HOUGH "HF"—Used  $\frac{3}{4}$  yd. Payloader, gas powered.  
TERRATRAC "500"—Used Crawler Tractor-Shovel, hyd. controlled.  
I-H "I-9"—R.T. Gas Tractor w/Hyd. Front End Loader.  
BARBER-GREENE "552"—Crawler-Mounted Bucket Loader.

### Twelve Transit Mixers

JAEGER 5 Yd.—Mixers (2), Continental power, sealed door, rear water entry, un-mounted, or mounted on LF172 & LF192 Trucks.  
SMITH 5 Yd.—Mixers (2), Continental power, sealed hopper, front water entry, un-mounted or mounted on White "2264" Trucks.  
SMITH  $4\frac{1}{2}$  Yd.—Used Mixer, Continental power, mounted on Dodge Truck.  
REX 3 Yd.—Used Mixers, mounted or un-mounted (3).  
JAEGER 3 Yd.—Used Mixers, mounted or un-mounted (2).  
SMITH 3 Yd.—Used Mixer, mounted or un-mounted.  
REX 2 Yd.—Used Mixer, mounted or un-mounted.

## EIGHMY EQUIPMENT COMPANY

120 S. Pierpont Phone WOODLAND 4-6706  
ROCKFORD, ILLINOIS



### WANTED—DISCARDED

GM51-71-110 Injector Parts  
Barnes and Gear Type Fuel Pumps  
Highway, 7120 Carnegie Avenue  
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# CONVEYOR RENTAL

## LARGEST SERVICE IN MIDWEST

18"-24"-30" TRUSS OR CHANNEL  
FRAME—ANY LENGTH



Completely assembled by section for easy field erection. Equipment new or used and in A-1 trouble free operating condition. Free engineering and design service offered to assure correct system for your application. Sales engineer available to discuss our rental and option-to-purchase plan.

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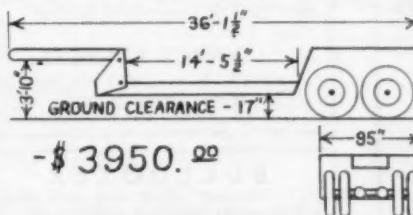
## SESCO ENGINEERING AND SUPPLY CORP.

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Phones: GRand 1-3926 & GRand 1-3355

SALES • RENTAL • SERVICE

## GOV'T. SURPLUS— 30 TON FOLDING GOOSE NECK LOW BOY



These trailers are in excellent condition with brand new oak flooring, complete ICC regulation wiring - air brakes - heavy duty springs - 14:00 x 20 tires on 10 hole Budd Wheels.

## WHITE TRACTOR PARTS & EQUIPMENT CO.

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## New Truck Parts And Equipment

**WXLC3 HERCULES ENGINES**, less accessories, 404 cu. in. displ. 4 1/4" Bore x 4 3/4" Stroke. **SPECIAL NET \$750 ea.**

**HXD HERCULES ENGINES**, less accessories, 855 cu. in. displ. 5 1/2" Bore x 6" Stroke. **SPECIAL NET \$745 ea.**

**RXC HERCULES ENGINES**, less accessories, 529 cu. in. displ. 4 3/8" Bore x 5 1/4" Stroke. **SPECIAL NET \$975 ea.**

**WXLC3 HERCULES Counterbalanced Crankshafts**, Hercules #20549AS. **SPECIAL NET \$85.00 ea.**

**JXD HERCULES Crankshafts**, Hercules #45853D. **SPECIAL NET \$65.00 ea.**

**WAUKESHA Water Pumps** for 135 engine. **SPECIAL NET \$37.50 ea.**

**MZA Waukesha Cylinder blocks**, demountable bell housing type. **SPECIAL NET \$250 ea.**

**BUDA 8 cylinder blocks** with sleeves for DC1290 Engine, Buda #DE67046. **SPECIAL NET \$440 ea.**

**BUDA cylinder heads** with valves for 844 or DCS1125 Engine, Buda #65402. **SPECIAL NET \$190**

**BUDA cylinder heads** for HP326 Engine #1283. **SPECIAL NET \$20.00 ea.**

**HEIL 30,000 lb. double drum winches**, Model DDB. **SPECIAL NET \$345 ea.**

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Complete stock of other new Continental, Hercules and Waukesha engines and component parts. Also, specializing in New Timken and Eaton rear axles; Clark, Fuller and Spicer transmissions. Large stock of wheels and rims of all makes & sizes.

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Unit 1 - STEAM TURBINE, 3600 rpm, 200# Pressure, 438 hp, with GENERATOR, with EXCITER E-3039.

GENERATOR - ALLIS-CHALMERS 300 KW, 2300 Volts, 94 Amps, 60 Cycles, 3 Phase, 3600 rpm, with Exciter E-3039 with 621 TURBINE.

EXCITER - ALLIS-CHALMERS 125 Volts, 3600 rpm, 52 Amp, Frequency Changer, with E-3038 Generator, with 621 Steam Turbine.

Unit 2 - KERR TURBINE rated KW 1000, 3600 rpm, driving GENERATOR E-3035, attached to Frequency Changer E-3037.

GENERATOR - ALLIS-CHALMERS, 3 Phase, 60 Cycles, 3700 rpm, Generator on Steam Turbine #620.

EXCITER - ALLIS-CHALMERS 125 Volts, 98 Amps, 3600 rpm, Frequency Changer, attached to Steam Turbine #620, attached to Generator E-3035.

**JACK HARRISON SALVAGE CO.**

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BITUMINOUS HOT MIX PLANTS  
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ALLIED EQUIPMENT

For: Qualified Engineering Service Write:  
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CRACKS REPAIRED  
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G. M. C.  
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GAS AND DIESEL

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Having decided to discontinue the building construction, we will sell the following equipment stored at the hemp mill warehouse at Markesan:

Model 65 Wayne crane-backhoe, w/shovel attachment, gas engine, in excellent condition

4 M. Sq. Ft. Waco forms—2x8 panels, 2 yrs. old

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4" CMC diaphragm pump—very good

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Waco and Superior ties

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ALLIS-CHALMERS HD-20 with Baker Blade. A good running '54 unit at a Bargain Price.

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USS Thread - Double Heat Treated - Made to O.E.M. Standards.

SIZE	PRICE
1" x 3"	\$41.00 per C
7/8" x 2 1/2"	28.00 per C
3/4" x 2 1/4"	17.00 per C
3/4" x 3"	19.00 per C
5/8" x 2 1/4"	11.50 per C
5/8" x 2 1/2"	12.50 per C

PRICES QUOTED DELIVERED ON MINIMUM ORDER OF 1,000 PIECES

Complete Stock of All Sizes of Plow & Track Bolts & Nuts.

## NO. 7 BUCKET BOLTS AVAILABLE

ALSO, CAP SCREWS

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EUCLID TRUCKS - Rear, Bottom Dumps and Scrapers.

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All Sizes and Makes  
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ATTACHMENTS For some machines.  
TRUCK CRANES, DOZERS, FRONT  
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LOWBED TRAILERS.

Model 80D Northwest Shovel and  
Dragline .....\$13,000.00

## WILLIAM LUBRECHT, III

Construction Equipment

311 W. Diamond Ave. - Hazleton, Pa.  
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## ILLINOIS TOLL ROAD EQUIPMENT AVAILABLE

Plants, Scrapers, Finishing Equip., Pavers,  
Forms, Crushers, Washing Plants,  
All sizes of Used Truck Mixers.

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## PILE DRIVING LEADS AND HAMMER

20' to 30' Sections.  
Hammer Weight  
3000 Lbs.

## BRAND NEW GOV'T SURPLUS

Adaptable to all makes  
Machines

\$2,000.00 Value

## SPECIAL - \$795

For Complete Unit.  
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TPH. Plant is homemade and patterned  
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Limerock Plant. 24" belting through-  
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Composed of the following units:  
15"x24" Cedar Rapids jaw.  
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4'x10' three deck selectro screen.

- 1—Caterpillar D13000 power unit.
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  - 1—Caterpillar D318 — 45KW electric set.
  - 3—Caterpillar DW10 Tractors with  
CW10 hydraulic scrapers.
  - 1—Shovel attachment for L551 Link  
Belt.
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- Listing subject to prior sale.

Contact N & L Construction Co.,  
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(2) Northwest #25, ¾ yd. draglines,  
S/N 16231 and 16040, GM engines.  
With ¾ yd. buckets .....\$12,000 ea.

Northwest #41, 1 yd. dragline crane,  
S/N 6610 w/GM engine, 1 yd. bucket  
and backhoe attachment w/bucket.  
.....\$16,500.00

AC Model HD 9B tractor, S/N 2100, with  
GarWood Dozer .....\$8,500.00

AC Model HD 5B tractor, S/N 27124  
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## WOLVERINE CONTRACTORS, INC.

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# KOLMAN Vibrating Screens Easily Installed on Any Conveyor



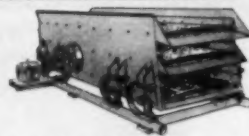
## KOLMAN VIBRATING SCREENS

SB-80 Kolman single-deck vibrating screen

Now you can convert your present conveyor into an efficient,  
low-cost Conveyor-Screen loading and screening plant.  
Regardless of the size or make of your conveyor, there is  
a Kolman Screen to fit your application. Universal mountings  
make installation easy. Only a simple drive arrangement  
from a power source on your conveyor to the screen jack shaft  
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provide separate operation of belt and screen.

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1. Road Construction Company
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5. Engineering Concern

Location: Iowa, Indiana, Illinois

Can Furnish: Financial Help - Administrative Help  
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## FOR IMMEDIATE DELIVERY PIONEER 45VE CRUSHER

Pioneer Model 45VE Semi-Electric Portable  
Crushing and Screening Plant. Serial Number  
45VE-125, equipped with 1036 jaw crusher,  
2240 rolls, 4' x 12' inclined vibrating screen,  
24" overhead conveyor, 24" under-crusher con-  
veyor, all mounted on steel truck frame with  
tandem axle, air brakes, and kingpin, includ-  
ing 30' x 60' portable feed and delivery con-  
veyors, 24" x 50' portable sand conveyor, re-  
ciprocating feeder with trap and wings. Main  
plant powered by Cat D-337 Series "F" Diesel  
Engine. Conveyors, screen, all motor driven,  
powered by Cat D-326 Diesel Engine with 75  
KW Generator. Used approximately 1900 hours.  
Good condition throughout. Location—Albu-  
querque, New Mexico. Price—\$75,000.00.

## R. L. Harrison Co., Inc.

1801 4th Street, NW  
Telephone CHapel 7-8811  
Albuquerque, New Mexico

## SHOVEL FRONT

### For Bay City Model 45 or 450

Complete with Dipper Stick and 1 cubic yard  
Bay City Bucket. Has had limited use. In  
very good condition.

## BACKHOE ATTACHMENT

### For Bay City Model 45 or 450

Complete with 1 yard Bay City Hoe Bucket  
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31" lip with side cutters to give 36" cutting  
width. In good shape.

## LORAIN SHOVEL FRONT

### For Model 77 Machine

Fits any Lorain 75 to 80 series machine. 1½  
cubic yard Amsco Dipper in excellent condition.  
Dipper worth more than total asking price.  
No re-rack clutch or controls.

## McALLISTER EQUIP. CO.

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Phones: Fillmore 5-2740  
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Warehouses from Coast to Coast Write for Nearest Dealer  
(OWNED & OPERATED BY SOUTHERN TRACTOR PARTS CORP.)

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- 1—Model "B" LeTourneau-West-  
inghouse Teurnapull, S/N 30204  
Excellent Condition .....\$30,000.00
- 1—Model 285 Koehring combina-  
tion shovel, backhoe, crane &  
drag, S/N 6159..... 10,500.00
- 1—1 yard Lima Shovel w/torque  
converter, S/N 330016. .... 16,250.00

## CONTRACTORS EQUIPMENT COMPANY, INC.

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LEXINGTON, KENTUCKY

## FOR SALE

- 1—Transverse Screenshot Blaw-Knox Concrete Pav-  
ing Finisher, Model XE, with Front Crown  
Screw (25 ft.). Purchased new 1952; never  
used.
- 1—Heltzel Dummy Joint Transverse and Longi-  
tudinal Flex Plane Machine. Purchased new  
1951; used only 6 months.
- 1—Koehring Longitudinal Finisher with Auto-  
matic Screenshot Shift and Crown Transition  
attachment. Purchased new 1951; used on  
one job.
- 1—Jersey Spreader Model 101, Ser. #652. Pur-  
chased August 1955, had little usage.
- 2—Model 75 Conway Muckers, 36" gauge, with  
75 HP, 220 V, 60 cy. 3 phase motor.
- 1—Model 50 Conway Mucker 36" gauge, with  
75 HP, 220 V, 60 cy. 3 phase motor.
- 1—Cleveland Trencher Model 95-5 (Wheel  
type) Serial #3174. Purchased Sept. 1951,  
is in excellent condition.

## Mahoney-Clarke, Inc.

217 Pearl Street New York 38, New York

## BATCH PLANT

Tampo Portable, 500 cu. yd. capacity, com-  
plete with 400 bbl. cement silo. Used  
8 months. Good condition.....\$15,000

Crane, Bay City Crawler, Model 30, 3/4 yd.  
bucket, 35' boom .....\$5,000

Tractor, International TD-14 with Isaac-  
son angle dozer .....\$3,300

AUSTIN-WESTERN CRANE, Model 12T,  
hydraulic, with outriggers. Used 8  
months. Good condition .....\$13,500

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Walnut 3-7701

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or

### Rental with Option to Purchase

- 8—Allis Chalmers dozers and pushers mod-  
els HD-20 all with torque converters and  
DD PCU's
- 703 and 703SC Lima crane backhoe combi-  
nations
- 1201 and 1601 Lima shovel, dragline combi-  
nation
- 23TDT Euclid motor scrapers
- 63DT Euclid 22 ton rear dumps
- Bros 50 ton compactor
- 600 CFM Chicago pneumatic rotary com-  
pressor
- Gardner Denver Air Trac drills with 4 1/2"  
drifters
- DW-21 Caterpillar with CGD movable duck  
bodies and/or 470 scraper bowls
- One complete concrete spread including  
batch plant
- Wobble wheel roller
- Le Tourneau roller
- Sheepsfoot roller, dual drum 42"
- Miscellaneous small tools i.e., pumps vibra-  
tors, form tappers, etc.

THE UNION BUILDING & CONSTRUCTION CORP.  
315 HOWE AVE., PASSAIC, N.J., PRescott 7-1200

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### ERECT CRANES - DRAGLINES SHOVELS - BACKHOES

LATE MODELS - EXCELLENT CONDITION  
Manitowoc 2000B, 3000B, 3500, 3900 and 4500.  
Northwest 25, 6, 80-D and 95 Models.  
Bucyrus-Erie 22-B, 51-B, 54-B.  
Marion, Koehring, Link-Belt, Lorain, Lima &  
P&H long booms, wide long crawlers, diesel  
powered. In equivalent sizes available.

### JAMES C. FRENCH

SPECIALIZING ON:

Cranes - Drag - Clams - Shovels - Backhoes  
P. O. Box 188 - 226 Berry Pkwy.  
Park Ridge, Illinois - TALcott 3-4927

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### I.H.C. TD18 TRACTOR

S/N 182M37338, with Drott 3 yd. - 4 in 1  
Hyd. loader. Approx. 7 months old, in excel-  
lent condition. Will sacrifice.

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Barrington, Illinois  
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Clearing House Ads  
Bring Results

## Heavy Excavation Equipment

Shovels - Cranes - Drills - Trucks

2400 Lima Dragline, 120', 5 yd.  
4500 Manitowoc Drag, 120', 5 yd.  
120-B Bucyrus Erie Elec. Drag, 115', 5 yd.  
85-B Bucyrus Erie Drag, 90', 4 1/2 yd.  
111-M Marion Drag, 100', 4 yd.  
1601 Lima 4 yd. Shovel/Dras  
1655 P&H Drag, 80', 3 1/2 yd.  
1201 Lima Dragline, 80', 3 yd.  
3500 Manitowoc Drag, 80', 2 1/2 yd.  
54-B Bucyrus Erie Drag, 80', 2 1/2 yd.  
1001 Lima Dragline, 80', 2 1/2 yd.  
95 Northwest Dragline, 80', 2 1/2 yd.  
151-M Marion 7 yd. Elec. Shovel  
170-B Bucyrus Erie 6 1/2 yd. Elec. Shovel  
4161 Marion 6 yd. Elec. Shovel  
2400 Lima 5 1/2 yd. Stand. Shovel  
120-B Bucyrus Erie 4 yd. Elec. Shovel  
111-M Marion 4 yd. Standard Shovel  
80-D Northwest 2 1/2 yd. Standard Shovel  
54-B Bucyrus Erie 2 1/2 yd. Standard Shovel  
3500 Manitowoc 2 yd. Standard Shovel  
25 Northwest 1/2 yd. Backhoe  
22-B Bucyrus Erie 1/2 yd. Backhoe  
34 Lima 1/2 yard Shovel  
Unit 1828 1/2 yard Shovel  
Large selection of other Shovels and Draglines available.  
Model T-750 Reich Heavy Truck Mounted Rotary and Down-the-Hole Drill  
Lima Model "C" Roadpacker  
Euclid Trucks - Rear & Bottom Dump  
Truck Cranes, Dozers, Graders, Scrapers, Front End Loaders, Drills, Buckets, Attachments and other misc. equipment available.

**FRANK SWABB EQUIPMENT CO., INC.**

313 Hazleton Nat'l. Bank Bldg.  
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2-C—Turnomatic Tournapulls

Excellent Rubber

Ready To Go

See To Appreciate

**SWEENEY TRACTOR CO.**

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DIRECT FROM U. S. GOV'T DEPOSITS—**



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**FOR SALE:** Boats; LST's; LCVP's; Aircrafts; Helicopters; Marine Engines; Radar; Sonar; Radio-telephones; Walkie-Talkies; Electronics; Nautical Instruments; ETC.  
**ALSO:** Jeeps; Trucks; Tractors; Amphibious Vehicles; Farm Machinery; Farm Implements; Generators; ETC.  
Thousands of other items too numerous to mention.  
**SEND FOR: "Depot List & Procedure"—\$1.00**  
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## DEPENDABLE USED MACHINES

Vermeer 4-T ditcher  
Lorain 40 ton truck crane  
PGH 255A, 1/4 yd. backhoe  
Bay City #25 gasoline dragline  
Int. Diesel tractor TD-9 w/B-E dozer  
Jeep CJ w/Jeep-a-trench & dozer blade  
**TRACTOR & EQUIPMENT CO.**  
10032 Southwest Highway, Oak Lawn, Ill.

## WINTER BARGAINS

**NELSON LOADER**—Model Q12TBM S/N 531291—on tracks — continuous bucket type for construction materials, snow, etc.—rated capacity 3 tons per min.—new condition, engine time only 29 hours, original paint on discharge chute—has independent 110-volt generator and light system attached and removable. ....\$4,500.00

**20-TON LOWBOY**—folding gooseneck, hydraulic operation—9 1/2 x 14 1/2-foot loading space—tandem axles—8 good 14x20 tires. ....\$2,250.00

**WAGON DRILL STEEL**—Ingersoll-Rand 1 1/4"x18". This is unused government release in perfect condition. Per Piece.....\$23.00

## ASPHALT DISTRIBUTORS

*All these machines and trucks are in good operating condition*

1,095-Gal. ETNYRE—Non-circulating bars—mounted on 1947 Diamond T truck—a good machine for prime, tack, etc. ....\$3,000.00

1,250-Gal. ETNYRE—full circulating bars—mounted on 1952 International truck. ....\$4,500.00

1,340-Gal. ETNYRE—full circulating bars—mounted on 1952 Chevrolet—an excellent all-purpose unit. ....\$4,500.00

1,595-Gal. ETNYRE—semi-trailer—full circulating bars—fully equipped for volume production. ....\$4,000.00

1,820-Gal. ETNYRE—semi-trailer — full circulating bars — another big capacity producer. ....\$4,250.00

## McELROY TRANSPORT CO.

P. O. BOX 7432

PHONE TE 8-2211

FORT WORTH, TEXAS

## SPECIAL

### Ready For Hard Work

Complete grading spread for \$60,000.00  
Or will sell separate for the following:

3—C Roadster Tournapulls,  
Each \$8,500.00 .....\$25,500.00  
1—D8 Caterpillar - 2U Model 15,000.00  
1—No. 12 Caterpillar - 8T  
Model ..... 10,000.00  
1—D7 Caterpillar Dozer - 3T  
Model ..... 12,500.00

Total.....\$63,000.00

### Schmeckenbecher Bros.

P. O. Box 197 - Phone FR 4-0810  
SWEET HOME, ARKANSAS

## For Sale

New Government Surplus

### 6 Blades For Snow Plows V-TYPE

For Mounting on Trucks  
with  
All Hydraulic Controls

Manufacturer is Wausau Model 4-S  
Located at Charlotte, N.C.

**S. A. Parramore & Sons**  
Mt. Pleasant, Florida  
Main 7-8905

### Two (2) Used Wells "U" Bowl Moldboards

For Allis-Chalmers Model HD21 Cable Bulldozers. 13' Wide and completely hard surfaced with only nine (9) months of use.

**Price: \$1,750.00 each**

F.O.B. Detroit, Michigan

### The Earl Equipment Co.

6331 Tireman Avenue  
Detroit 4, Michigan

## FOR SALE OR RENT

P&H Model 155-A #20373 1/2 yd. backhoe with 30" AMSCO Manganese bucket—like new.

### GROFF TRACTOR & EQUIPMENT CO.

Rt. U. S. 230 Highspire, Pa.  
Phone: Steelton, Pa., WEbster 9-9505



## With the Manufacturers and Distributors

(Continued from page 208)

Corporation, York, Pa., announced recently. Readco's products include aluminum lighting standards, flag poles, bridge and highway railing.

KAISER ALUMINUM & CHEMICAL SALES, INC., announces the appointment of Ford R. Morrow as manager, industrial construction product sales, located at the company's general sales offices in Chicago. The company's industrial products include bridge railings, signs and chain link fencing and structural applications such as substations, transmission towers, cranes and bridges.

S. JOHN OECHSLE, SR., president of Metalweld, Inc., Philadelphia, has announced that the firm's Construction Equipment division has officially adopted the name M-W Equipment Company. Oechsle stated that the Protective Coatings and Industrial

Welding division of the company are fully described by the name Metalweld but that a division name was required to cover the scope of their operations as a distributor of construction and industrial machinery in eastern Pennsylvania, southern New Jersey and Delaware.

"QUICK WAY" TRUCK SHOVEL COMPANY has announced the appointment of Gilbert S. Rigdon as executive vice president of the company. The new "Quick Way" board is composed of Alfons Landa and Robert C. Finkelstein of Penn Texas and Gilbert S. Rigdon and David E. Bright of H&B American Machine Co., Inc.

THOR POWER TOOL COMPANY has moved its Chicago sales and service branch to the company's SpeedWay Motor Division plant at 1834 S. Laramie Ave., where additional space and facilities will permit improved service for distributors and users of Thor tools, it was announced by Neil C. Hurley Jr., Thor president.

I. J. KARASSIK has been appointed consulting engineer and manager of planning for the Worthington Corporation, Harrison Division, according to

A. M. Tullo, general manager. Karassik will act as consulting engineer to all departments in the Harrison Division.

HOWARD E. WALKER has become associated with the research department of the Flintkote Company to work on special assignment with the Insulrock Division, according to an announcement by George J. Pecaro, president.

RONALD B. BENGSTON has been appointed personnel manager of Hyster Company's Peoria and Kewanee, Ill., plants, according to an announcement by R. M. Ronald, vice-president of the tractor equipment division. Bengston has been with Hyster for about ten years and has been both accountant and office manager.

THE FOUR WHEEL DRIVE AUTO COMPANY, Clintonville, Wis., celebrated its 50th birthday by changing its name to FWD Corporation. Stockholders of this manufacturer of heavy-duty trucks and other specialized vehicles voted to adopt the new name at their annual meeting Tuesday, January 13, four days after the 50th anniversary of the company's incorporation, which took place on January 9, 1959.

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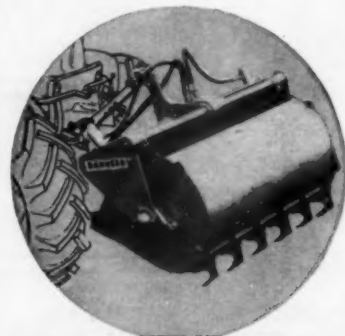
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DIAMOND T. MOTOR TRUCK COMPANY has announced the appointment of seven new dealers. They are: Don B. French and Associates, Walla Walla, Wash.; Diamond T. Montana, Miles City, Mont.; Segal Truck Sales & Service, Inc., Lafayette, Ind.; Collier's Truck Service, Uniontown, Pa.; Carolina Parts and Equipment Co., Hampton, S. C.; Diamond T. Truck Sales, St. Paul, Minn.; Paling Motor Service, Hamilton, Ontario, Canada.

## New Radio Equipment for Texas Department

The 2-way radio communications equipment to be used by the Texas Highway department in the Fort Worth, Dallas, Wichita Falls, Lufkin, Bryan, Brownwood, Waco and El Paso districts is now in production at the Motorola plant in Chicago. More than 35 base stations and 240 mobile units are being manufactured under terms of the \$250,000 contract awarded that company.

The award provides complete communications facilities to high-



Motorola quality control engineer checks 2-way radio unit made for Texas Highway department.

way vehicles, warehouses, headquarters in the eight districts. Besides the base stations and mobile radios, such accessories as remote control consoles, monitor receivers, anten-

nas and towers will be used in the system.

The entire network will be in operation during the first half of this year.

AIR REDUCTION SALES CO., 150 East 42nd St., New York 17, N. Y. has issued a new 36-page Catalog (Form ADC 705 F) covering its complete line of cylinder, manifold and station pressure regulators. It contains flow and pressure specifications and inlet and outlet connection dimensions for each regulator. Adapters, station valves, flowmeters, hose connections and pressure gauges are described in detail.

THE YALE AND TOWNE MANUFACTURING COMPANY has appointed two new distributors for its Trojan tractor shovel line. They are Moody Equipment & Supply Company, Little Rock, Ark., and Cook Bros. Truck and Equipment Company, Construction Equipment Division, Oakland, Calif.

N. K. HOLDING is the new construction machinery sales manager of the Allis-Chalmers Syracuse (N. Y.) branch. He joined the branch as assistant construction machinery sales manager last November.

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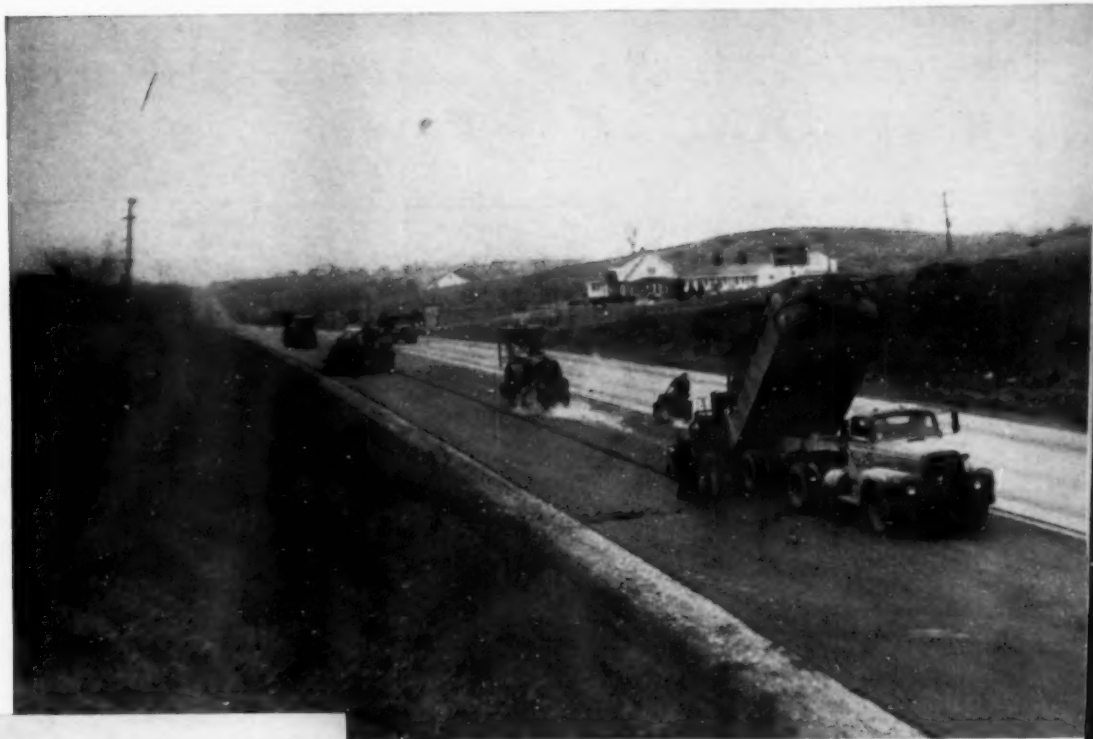
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